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SOUTH AFRICAN HORSE SICKNESS.

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MY object in committing to print the following notes on this subject, which I made during a recent horse-breaking tour through the Cape Colony, Orange Free State, The Transvaal, and Natal, is to prompt other observers to record, in the VETERINARY JOURNAL, their experiences of it, so that our knowledge of the disease may be rendered more definite and better matured than it is at present.

Definition.—It is a specific fever peculiar to the horse family, and is characterised by intense congestion of the blood vessels, with grave alteration of the blood, so that there is an escape from the blood-vessels of a large quantity of serum into various tissues.

Geographical distribution.—It appears to be confined to Africa, and is prevalent throughout the whole of the southern portion of that continent. Dr. Fleming mentions that the Italian Government horses suffered from it during the occupation of Massowah.

Varieties.—It is generally considered that there are three varieties, namely, (1) the lung form, which is the most common kind, and which we might term "specific equine pleuro-pneumonia;" (2) thick head (*Dutch:* dikkop); (3) and blue tongue. Mr. Wiltshire, Colonial Veterinary Surgeon of Natal, recognises two other varieties, viz., the enteric (or bowel) form, and one of which ordinary fever is the most marked symptom. His observations on the last-mentioned two kinds may be seen further on.

The microbe or virus of horse sickness.—Unfortunately, up to the time I am writing, Dr. Edington, Colonial Bacteriologist for the Cape Colony, who has been engaged in the investigation of this disease, has not published the result of his labours. There is, however, but little doubt that he has confirmed the supposition made by Mr. Wiltshire, Mr. Nunn, F.R.C.V.S., and others, that horse sickness is due to the entrance into the body of a specific bacterium. Mr. Nunn describes the microbe which he found in the blood of affected animals, and which he considers as specific to this disease, as one that closely resembles the *bacillus anthracis*, but is somewhat larger. I believe that Mr. Nunn did not verify the results of his research in this direction, by cultivating the organism and then producing the disease afresh.

Immunity.—I have heard, though I have had no opportunity of verifying the statement, that donkeys are exempt from this disease, and that mules are less liable to it than are horses.

Method of invasion.—The contagion does not appear to be carried by the air, as is the case of that of malarial fever of man; but seems to be brought into the system along with the fodder, and, possibly, in the drinking-water, and is then taken up by the blood. It is, in fact, fixed, and not volatile. "I don't think it is a malarious disease; for horses kept stabled near swamps and in well-known infected places, do not die of horse sickness if fed entirely on *dry food*, and are not allowed to eat grass during the sickly season. Again, there have been instances of great mortality from it in one district, while an adjoining one, separated only by a narrow river, has been almost entirely exempt."—*Mr. Wiltshire.*

Influence of locality.—Dry, high pastures at an altitude, say of 6,000 feet above the level of the sea, are, as a rule, free from the disease, unless they have been contaminated by the introduction of affected stock; the original home of this microbe appearing to be moist and low-lying lands. "Of late years, however, the high lands of Natal and the Orange Free State have suffered most, even in places where the disease had previously been unknown. On enquiry, I have found that, formerly, infected animals, on the sickness breaking out among them, had been sent to these places, which then became affected."—*Mr. Wiltshire.* I cannot say how long the microbes would continue to exist in a dry and cold locality, in which they would be more or less exotics. As a factor in the existence and development of the microbe, the amount of altitude above the sea seems to owe its effect to increased cold and dryness.

It is evident from the foregoing considerations that the microbe of horse sickness, like that of anthrax, can live and retain its virulence outside of the animal body.

Influence of season of the year.— In the Cape Colony, Orange Free State, and Transvaal, the disease rarely occurs before February, although this year (1892) it broke out in the eastern province of the Cape Colony early in January. It is usually worst in April, and, as a rule, disappears with the first frost in May. "In Natal it generally begins on the sea coast a little before Christmas; at Maritzburg, about February; and up country somewhat later. March and April are the worst months.

"Occasional cases are met with even in the winter on the coast. One undoubted instance occurred near Ladysmith during the Boer war in 1881, in July or August, when the ground was covered with snow.

"As summer is the rainy season in Natal, a hot, moist climate is supposed there to be most favourable for an outbreak of the disease, which, in this respect, does not follow any definite rule. In fact, some wet seasons have been very healthy, and some dry ones particularly deadly.

"There is no doubt whatever that the advent of frost almost invariably stops the sickness at once, and generally causes it to show in, and kill, any horses in which it may then be latent."—(*Mr. Wiltshire.*)

I may mention the interesting fact that yellow fever in man, like horse sickness in horses, disappears on the approach of frost.

Yearly sequence.—Outbreaks of horse sickness do not follow any regular sequence as to time. In some places, like Pretoria, it occurs almost every year; in others, at irregular intervals.

Mortality.—During a year in which the disease is rife, like that of 1892, the loss of horses in South Africa may amount to 70,000 or 80,000, or even more. The lung form is extremely fatal, the percentage of recoveries being probably not more than one or two. The other varieties are not so dangerous to life, although in them the rate of mortality is very high. Many persons who have had an extended experience of horse sickness, tell me that they have never known a case of the lung form to recover.

Contagiousness.—This disease does not appear to be infectious. Mr. Hutcheon, Colonial Veterinary Surgeon for the Cape, and Mr. Wiltshire, C.V.S. for Natal, Mr. Nunn, F.R.C.V.S., and other veterinarians, have failed to produce it

by inoculation. Dr. Edington, however, states that he has not alone done so, but has also successfully inoculated dogs, cats and rats.

Period of incubation.—According to Dr. Edington, the period of incubation is eight days. Mr. Wiltshire puts it at ten days.

Predisposing causes and preventive measures.—Any debilitating influence, such as exposure, want of proper food, and fatigue, predisposes an animal to contract horse sickness by lessening the ability of the vital powers to resist an attack. I have been informed by proprietors and managers of various South African mail coach lines, that their horses, which are well fed, though indifferently stabled, enjoy a marked immunity from this disease, even when animals at grass in the vicinity are dying from it in great numbers. The former have to do their work at all hours, late and early. The latter, as a rule, are more or less starved. Cases of horse sickness are all but unknown in South African racing stables, the horses of which, I may mention, seldom, if ever, get any green grass when in training. They generally go out, however, in the early morning, while the dew is on the grass. Mr. Oliver Davis, of Harrismith, who is a well-known owner of horses and gentleman rider, tells me that when he was in the Natal Mounted Police, he managed, during several deadly seasons, to keep his troopers free from the sickness by fumigating the stables after sunrise and a little before sunset. His procedure was, after taking the horses out of the building, to burn a small heap (placed in an empty kerosine tin for safety sake) of dried horse dung and soiled litter, and then to shut up the doors and windows for about a quarter of an hour, until the place was thoroughly filled with smoke. The stable was then opened and the horses allowed in. Mr. Davis says that this is an old Dutch means of prevention. I may mention that he took no other precautions, such as restricting the animals to dry food. The experience of a large number of South African farmers is greatly in favour of keeping horses in a stable, or even in an enclosure, if it be intended to turn them out to graze, until the sun has dissipated the dew off the grass, say, until eight o'clock in the morning. If this theory be correct, and I must say that it is well backed up by numbers of practical men, it would appear that the contagion of horse sickness requires the presence of moisture to develop its virulent properties. Damp weather seems to favour its spread. I may explain that South African farmers have few facilities for putting horses up at night in covered buildings. When they desire to keep their animals collected together, they usually

put them in a *kraal*, which is simply a walled-in enclosure, the ground of which, from being constantly trodden upon, very rarely has any grass on it. I have been told by many of these farmers that the plan of keeping horses in a *kraal* at night acts quite as well in preventing the sickness as that of stabling them. It is evident that when the disease appears in a district, special attention should be paid to stable management, or, if the horses be at grass, that they should be sent away to some high grazing ground above the zone of the disease, a plan which is adopted, generally, by owners of large droves of horses, who have, like, for instance, those at Grahamstown and Harrismith, facilities for doing so. In the case of stabled horses, they should be fed on dry food, such as "forage" (as unthrashed oats are termed in South Africa) and "mealies" (Indian corn) or oats, and should on no account be allowed any grass. In support of this advice I may mention that I have heard, from reliable authorities, of several cases of stabled horses, during an outbreak, contracting the disease, apparently from having been fed on grass, while those which were in the same stable, but which were kept on dry food, remained free from it. Some authorities recommend bleeding to the extent of about two gallons, as a preventive measure. Mr. Vanderplank, M.R.C.V.S., of Maritzburg, informs me that he has given with marked success as a preventive, a drachm of Jeye's fluid in a pint of water once a fortnight to each of the horses under his charge. With the knowledge of the admirable results achieved by M. Pasteur's method of protective inoculation against anthrax, veterinary surgeons are naturally in hopes that a similar means may be found applicable to horse sickness. Dr. Edington, who is a profound bacteriologist, is at present working in this direction, and there is, I believe, every probability that his labours will be successful.

"*Salted*" *horses.*—The common belief is that horses which have had, and have recovered from, an attack of this disease, possess immunity ever after from it; and, consequently, their value becomes much enhanced in districts in which the complaint is enzootic. During my tour in South Africa, I was able to obtain but little exact information on the subject of "salted" horses, which, I had imagined, were an ordinary article of commerce in that country. In fact, though I made many enquiries, I failed to find a single animal of the kind. The few persons I met who had, so they said, seen "salted" horses, informed me that these animals present a dejected and debilitated appearance; that the skin about their head

and neck is unusually loose and wrinkled; and that they are liable to relapses of the disease, though in a milder form. Mr. Wiltshire tells me that in the ordinary course of events, they always die eventually of it. From a photograph which I have before me of a "salted" horse, I see that the hair of his mane and forelock stick out in a particularly rough and disordered manner, so that it would have been impossible to have made the mane lie on one side, or the forelock to fall straight down. I have heard that all "salted" horses have this peculiarity of the hair of the mane and tail.

Symptoms of the lung form of horse sickness.—There is great congestion of the blood vessels; the mucous membrane of the eyes and nose assume a dark red colour; and a copious interlobular effusion takes place in the lungs. The breathing becomes extremely hurried, often about 75 in the minute, with heaving of the flanks. There is great depression. There is an escape into the bronchial tubes, of serum (mixed with mucus), the presence of which, even before any discharge takes place from the nostrils, can be readily detected by the bubbling sound that may be heard by applying the ear to the front of the chest. As this fluid accumulates more and more in the bronchial tubes, it is discharged from the nostrils, usually in large quantities, and in a somewhat frothy condition, which it soon loses if it be allowed to collect on the ground. It will then be seen to be of a yellow colour. The fluid may trickle from the nostrils, or may be discharged in streams. Although I have never measured, in a fatal case, the amount of this poured-out fluid, I would conjecture that it would be about three or four pints. This frothy serum is altogether different in appearance from the foam tinged with altered blood, which is frequently given off from the nostril towards, or after, the termination of fatal cases of anthrax. The internal temperature is high. "One very characteristic symptom is the distension or bulging of the pits above the eyes" (*Mr. Hutcheon.*)

As far as I can learn, the duration of a fatal case of this lung sickness is usually from one to two days from the first appearance of an elevation of temperature. As a rule, the patient dies very suddenly, frequently within an hour or two of the time he was first seen to be ill. The general idea in South Africa is that it lasts only as many hours, or even less; the cause of this mistaken opinion being evidently want of ability to recognise the symptoms until they are of a pronounced character. As a rule, the end, from suffocation, comes on very rapidly.

Symptoms of other forms of horse sickness.—"In the *dikkop* form, the pneumonia is not so intense as in the lung form; the special characteristic being the swelling of the entire head.

"In the blue tongue variety, symptoms of pneumonia are not very prominent. The muzzle, lips and tongue become swollen. The tongue also assumes a dark bluish colour. It turns cold, and often becomes too large to be retained in the mouth. Thick, dirty saliva falls from the mouth.

"In what may perhaps be termed the 'enteric' form, colic is the most prominent symptom, and is—as far as my experience goes—invariably fatal. After death, the usual evidences of the disease in the lungs are apparent, though less marked than in the lung variety.

"Another form begins as an ordinary fever, with petechiæ in the whites of the eyes; these are more or less large, according to the gravity of the case; I have seen the whole membrane of a deep claret colour, no white being visible.

"This fever, however, at times has a very rapid course, and delirium sets in, with a fatal result in a few hours. In some cases, colic is the prominent symptom. In others, one leg swells, and finally a large abscess bursts, leaving a raw, unhealthy sore to deal with, and a permanent thickening of the part. I have had cases of pyæmia, and death from it.

"Some of these cases, however, are very mild; the liver may be affected; and often there is a discharge from the eyes, similar to that of influenza.

"How I came to identify this with horse sickness, was by seeing these cases after a few days develop into unmistakeable ones of that disease. Lt.-Col. Duck and others have noticed the same thing.

"The temperature is usually high; often 106° F." (*Mr. Wiltshire.*)

Principles of treatment.—Considering the small amount of knowledge that exists about horse sickness, and the fact that but very trifling benefit in staying its course has been obtained from the administration of medicines, it seems almost futile to discuss the principles of its treatment. One point, however, in its pathology, cannot fail to strike the careful observer, namely, that the congestion of the blood vessels is a mere symptom of the disease. In, for instance, ordinary congestion of the lungs, however violent and rapidly fatal it may be, there is not the peculiar and copious effusion into the bronchial tubes which takes place during the congestion of the lungs in horse sickness. Hence we may assume that the blood, in the case of this South African

scourge, undergoes some morbid change which permits the escape of a large portion of its watery constituents. The use of antiseptics and salines is self-suggestive, and has, in practice, appeared to be of some benefit. Although our efforts, when combating a disease, should be chiefly directed to remove the cause, still we should try to allay symptoms, if their violence is likely to kill the patient. Evidently following this principle, Mr. Hutcheon recommends bleeding, in the first stages of the disease, to the extent of about two gallons. Mr. Wiltshire recommends the employment of hyposulphite of soda, chlorate of potash, and turpentine. From the knowledge of the good effects of turpentine in cases of purpura and anthrax, I would strongly recommend its being given a trial in horse sickness. It is a powerful volatile antiseptic, and tends to check congestion by stimulating the involuntary muscular tissue, which is the chief agent in causing the blood to circulate through its vessels.

Post-mortem appearances in the lung form of Horse Sickness.—The lungs are invaded by a yellowish effusion of serum, the presence of which can be seen on the outer surface of the lungs, upon which it appears in yellow patches. There is also an effusion into the pericardium and other tissues. The bronchial tubes are more or less filled with serum. The spleen is not specially affected—a fact which serves to distinguish this disease from anthrax. There are generally signs that pleurisy had existed. The blood is somewhat darker than usual; but does not in any way possess the tarry appearance which is characteristic of anthrax.

Questions respecting Horse Sickness.

1. Are the lung form, *dikkop*, and blue tongue, different diseases; or are they different forms of the same disease?
2. Is *dikkop* anthrax?
3. Are "salted" horses those which recover from the lung form, *dikkop*, or blue tongue; from the lung form only; or from anthrax?

We may reserve all questions regarding the microbe of horse sickness, and inoculability of the virus, until such time as Dr. Edington will have made his report on the subject, which is being investigated by him in a most able and exhaustive manner. Personally, I have to thank Dr. Edington and my professional brethren, Messrs. Hutcheon, Wiltshire, Armstrong, and Vanderplank for the kind manner in which they replied to my enquiries respecting horse sickness.

TUBERCULOSIS OF CATTLE.

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As was stated in an editorial in a recent number of the *Medical News:* "There is no aspect of the subject of tuberculosis that is not important. There is probably none more important than the prophylaxis. As the disease is in no small degree transmitted by the milk and flesh of cattle, any means that facilitates its detection in, and eradication from, the source of food-supplies, must command earnest attention."

More attention is being devoted to tuberculosis now than ever before; partly because the public is anxious to be enlightened in regard to the disease, and partly because work in this subject gives the investigator great promise of valuable results. The subject of tuberculosis of the lower animals has received its share of attention and is important in two ways: 1st. The disease is identical with tuberculosis of man, and cattle affected with it are a menace to public health; and 2nd., bovine tuberculosis is a dangerous contagious disease in herds, and is, therefore, a source of great loss to cattle owners.

To illustrate a few points with regard to the disease, and to describe a method of dealing with it, I shall give a short account of the Clairemont Farm herd of Jersey cattle, owned by Mr. J. E. Gillingham, of Villa Nova, near Philadelphia.

This herd was founded about ten years ago, and is derived from imported cows bought at that time. Additions of purely-bred animals have been made from time to time, and none but the choicest individuals have been selected, for which high prices have been paid. In-breeding has never been practised, and all of the conditions favouring good health have been observed. The stable is on the side hill, near the top, and is solidly built of stone. The cows are kept in the first floor, which is on a level with the barnyard, and is paved with cement. This room is high, dry, warm, and well lighted and ventilated. Four rows of revolving stanchions extend across the room from side to side, in such a way as to make two double rows of cows facing each other. The passage ways between the cows' heads are about eight feet wide, while the centre aisle is about 12 ft. wide. There are neither mangers nor feed-boxes, as the cows are fed from the floor.

It will be observed that neighbouring animals can come into almost as intimate contact with each other as when they are at liberty; they can lick each other, eat each other's food, etc., etc. The stable is, and always has been, a model of cleanliness; it is cleaned out several times each day, and land plaster is strewn over the floor to absorb the urine and other moisture. The cattle are carded and cleaned each day. The food was always carefully selected and of the best quality.

Tuberculosis was first observed in the herd about four years ago, and until last autumn the occasional animals which presented symptoms or lesions of this disease excited no alarm. The affected animals were destroyed as soon as the disease was diagnosed, and their places in the stable were disinfected. In this way it was hoped that the apparently but slightly contagious disease would be kept in check. Not only were the clearly diseased animals removed from the herd as soon as possible, but the herd was periodically examined by an expert, to detect, if possible, the incipient cases of the disease.

I was first called to see the herd in February of this year. and found a cow suffering from tuberculosis. The animal was promptly killed, and the diagnosis substantiated by the autopsy. A careful examination of the entire head of 79 animals revealed five additional cases of the same disease, and all of these were destroyed. Since so many cases had been found in the herd, and since the history showed that the first case had been found some years before, it was evident that other cows must have the disease, although all seemed to be healthy.

There are certain difficulties in the way of making a perfect physical examination of cattle, that are not met with in diagnosticating the diseases of other animals or of man. In cattle, kept for milk and beef, the digestive function is all important, and the abdominal organs have been developed by nature and breeding until they encroach upon the thoracic cavity. The voluminous rumen is sometimes distended with loose food, sometimes with fluids, and again with gas, and presses forward against the diaphragm, forcing it into the thorax, and thus materially altering the sound obtained by percussion over the posterior portions of the lungs. This interference is so irregular, and at times so great, as to render the results obtained by percussion over the posterior extremities of the cow's lungs of but little value. Auscultation of the lungs is also interfered with by the soft breathing of cattle, by the thick layers of interlobular connective tissue, and by

the confusing sounds which originate in the rumen. In those cases in which the tubercular lesions are not present in the lungs, but are well developed in the liver, intestines, mesenteric glands, etc., it is practically impossible to discover them until after the death of the animal.

The great difficulty in dealing with tuberculosis is to recognize the early cases, not leaving them to become well developed and dangerous to other animals. If none but the evidently diseased animals are removed from a herd, and the incipient cases are allowed to remain, the process of removal will be perpetual, because all cases constantly grow worse and new cases develop. As in other contagious diseases, the radical method is the only satisfactory plan of ridding a herd, a farm, or a locality of the scourge. This fact was discovered long ago during outbreaks of rinderpest and lung plague, and at present the only successful method of fighting these bovine pests is to kill not only all animals in which the disease is known to exist, but all of those in which there is reason to think that it *may* exist, on account of exposure to diseased animals. These seemingly harsh measures, coupled with stringent quarantine regulations, have freed the countries of Western Europe of rinderpest, and have relieved the United States of lung plague. It has been claimed that the same principle could be applied to tuberculosis, and the country rid of it as completely. But what a prodigious loss the enforcement of such measures would entail! There are few cattle in the Eastern States which have not been exposed to tuberculosis; so that the regulations so successfully employed in combating lung plague must be abandoned or materially modified, if we do not wish to kill off our entire stock of cattle and begin breeding anew.

What, then, is the farmer or dairyman to do when tuberculosis appears among his cows? False economy usually prompts the owner of diseased animals to keep them as long as they are productive or seem to have a market value, and when this stage is passed to slaughter them. For this reason a herd once infected with tuberculosis usually remains infected, and as long as the animals are kept together the disease becomes more deeply rooted. The cure consists, of course, in removing *all* affected animals, and thoroughly disinfecting the stable. Then, if examinations can be made at short intervals, and other cases, if they develop, be removed promptly, the prospects will be quite good for the health (freedom from tuberculosis) of the remaining animals. Such a plan is easy to formulate, and it has been advocated from

time to time, ever since Koch's discovery of the bacillus of tuberculosis in 1882; but the difficult point, the point which has rendered it impracticable, has been the impossibility of recognizing the early stages of tuberculosis—the beginning stages—before the disease becomes dangerous to other animals. A reliable means of diagnosis was all that was needed to make the scheme complete and effective. Such a means of diagnosis has been given to us by Robert Koch, in what is known as "Koch's lymph," or tuberculin. When this substance was first discovered the public expected it to cure consumption, and thus put an end to all suffering from this cause. As a remedy for the disease the lymph is not a success, but its injection into a tubercular animal, or man, is always followed by a rise of temperature, which rise is not observed after an injection into a non-tubercular animal, unless the dose is excessive. This fact has been employed by veterinarians in the examination of cattle suspected of having tuberculosis. Injections of the proper quantity of tuberculin are made, and if the animal is tubercular the temperature rises (*i.e.*, a reaction occurs); if free from tuberculosis the temperature follows its normal course.

This substance was first employed on cattle by Prof. Gutmann, of the Veterinary Institute of Dorpat, Russia, in January, 1891. The results were satisfactory, and led numerous other investigators and practitioners in all parts of the world to employ tuberculin. Some of these experiments were performed by friends and some by enemies of Koch, some by careful men and some by bunglers; all sorts of doses were used, and they were given with all sorts of syringes in the greatest variety of ways.

It is to be observed that the higher the scientific reputation of the man, the more favourable the report on the action of tuberculin, while most of the unfavourable reports came from unknown practitioners.

The report of Prof. Nocard, for the French Commission, was quite favourable. The report of the Tuberculosis Commission of the University of Pennsylvania was also decidedly favourable.

Only those experiments in which the tuberculin was injected in proper quantity, the temperature carefully measured, and a *post-mortem* examination made subsequently, are to be considered in judging of the value of tuberculin, because all others are open to numerous errors.

All of the experiments of this class that were performed prior to February 1st, 1892, were tabulated by A. Eber

(*Centralblatt für Bakteriologie*, 9, Nos. 9 & 10); and it is found that out of 134 cattle which reacted to tuberculin and were killed, 85·82 per cent. suffered from tuberculosis. That is, tubercular lesions were found in that many, but as these lesions are sometimes difficult to find, and as the *post-mortem* examinations were not always carefully made, it is altogether probable that some animals were marked healthy which were, in reality, tubercular. It is well known that very large doses of tuberculin will cause a rise of temperature in healthy animals, and probably some of the doses employed were not properly gauged to the size of the animal.

On the other hand, 113 animals, which showed no reaction after the injection of tuberculin, were killed, and 89·38 per cent. were found to be free from tuberculosis, while 10·62 per cent. suffered from the disease. No doubt some of these results can also be explained by a study of the doses employed. Even taking these results as they stand, errors and careless work included, we have satisfactory evidence of the surpassing value of tuberculin as an agent for detecting the presence of tuberculosis in the bodies of living cattle.

My own experience with tuberculin on the Clairemont cattle has led me to value it as one of the most useful agents of veterinary science.

In order to detect and remove all diseased animals, a dose of tuberculin was administered to each individual in the herd of 79 animals. The method of administration was as follows:— The temperatures of the animals were measured at about 6 p.m., and soon after from 0·2 to 0·4 c.c. of tuberculin, diluted with nine parts of a one per cent. solution of carbolic acid, was injected under the skin of the right scapular region. The skin was always carefully disinfected with a four per cent. creolin solution before and after the injection. The temperature was measured again at 11 p.m., at 2 a.m. and 5 a.m. The reaction became manifest in from seven to eleven hours after the injection. In some animals the rise of temperature was gradual, commencing about the seventh hour and increasing each hour, until the 11th or 12th, when it commenced to fall. In other animals the temperature would not rise until about the 10th hour, when it would go up quite suddenly and fall rapidly after the 12th hour.

Of those animals tested, thirty-three reacted in a manner which has been taken to indicate the presence of tuberculosis. These animals were both cows and heifers, and to all external appearances, as healthy as any cattle on the farm. But a few of them coughed, their coats were fine and bright, the skin

soft and moist; they were in good condition and spirits, and their appetites were regular. Twenty-seven of these animals have now been slaughtered, and the remaining six are at the Veterinary Hospital of the University of Pennsylvania, and will have been killed before this Journal reaches its readers. All of the twenty-six slaughtered animals showed distinct tuberculous lesions, some in the thoracic organs, some in the abdominal organs, and some in both.

The *post-mortem* examinations were made with the co-operation of Drs. John Guiteras, E. O. Shakespeare and A. C. Abbot; and specimens of organs about which there could be a doubt, were examined by these gentlemen. There was not an animal in which the lesions could not be readily discovered.

The following tables will indicate the action of the tuberculin in a few of the cases:—

Cow, No. 13.—Injected with 0·25 c.c. tuberculin on March 8th, at 6.15 p.m.

Time	6.15 p.m.	12.30 a.m.	3.15 a.m.	6.15 a.m.
Temp.....	101⅗° F.	101⅖° F.	101⅗° F.	102½° F.

Killed March 30th. The bronchial glands were slightly enlarged and contained small cheesy nodes. One cheesy tubercle, the size of a pea, was found in the left lung. Two small tubercles were found in the liver.

Cow, No. 20.—Injected with 0·25 tuberculin March 1st, 1890, at 7.30 p.m.

Time	7.30 p.m.	12.20 a.m.	3.45 a.m.	6.30 a.m.
Temp.....	102° F.	102⅘° F.	103° F.	106° F.

Killed March 26th. Large tubercular masses on costal and diaphragmatic surfaces of both lungs. Posterior six inches of right lung consolidated, contains numerous small cheesy nodules. Mediastinal glands enlarged and cheesy. Liver contains numerous cheesy nodules the size of peas. Intestinal walls show many small elevations which contain cheesy material and are tubercular.

Cow, No. 35.—Injected with 0·25 c.c. tuberculin on March 8th, 1892, at 6.50 p.m.

Time	6.50 p.m.	12.50 a.m.	3.40 p.m.	6.45 a.m.
Temp.....	102°	101⅘°	103°	106⅖°

Killed March 29th. A few cheesy tubercles were found at the root of the right lung. The liver contained many small cheesy tubercles. The uterine mucous membrane was thickly studded with tubercles the size of shot; some fresh, some

cheesy. Many tubercles were found on the peritoneum covering the spleen. The sublumbar lymphatic glands were tubercular.

A second examination with tuberculin was made about six weeks after the first, and none of the cattle which passed the first test showed a reaction at the second. This fact should be sufficient of itself to show that the lymph is harmless; but when we consider the method of preparation of the tuberculin, the careful sterilization by heat and the filtration through porcelain, we should not fear to use the substance on the most susceptible animals.

From the above facts, and those obtained by foreign investigators, it is justifiable to say that tuberculin is a safe and reliable agent for the diagnosis of tuberculosis in cattle.

The question of the transmissibility of tuberculosis from animals to man, is one which has received a great deal of attention; but positive proof, in a question of this sort, is almost impossible to produce. We cannot make experiments on men by feeding them with the products of tuberculous animals; and when we observe tubercular lesions in persons who have eaten these things, who can say that the food caused the lesions? We do know, however, that the tubercle-bacillus is the sole cause of tuberculosis; that the bacillus of tuberculosis in man is identical with that of animals; that these bacilli are sometimes present in the milk of tuberculous cows; and that such milk has caused tuberculosis in pigs, sheep and goats, when fed to them in the natural way. There are numerous observations which seem to show that tuberculosis of children and adults has been caused in the same way.

Cases have been reported in which living tubercle-bacilli have been found in the butter made from the milk of tubercular cows.

The disease, tuberculosis, is quite wide-spread among the cattle of the Eastern States. How prevalent it is cannot be stated, for we have no statistics on the subject. Some localities have more of the disease than others, and it is more common in some breeds of cattle than in others. Some herds are free from the disease, some have but a few affected animals, and in others 50–75 per cent. are tubercular. The disease is far more prevalent in dairy districts than in general farming communities, and especially where the dairy industry has been established for a great number of years.

In Europe, the disease is far more prevalent among cattle than it is in this country; but some parts of the Eastern States approach the European condition in this respect, and it can be

but a matter of time until we have as much bovine tuberculosis in this country as is to be found anywhere in the world.

The disease *can* be checked, and some day measures for its suppression will surely be inaugurated. By commencing now much expense, much misery and suffering can be avoided. Certainly the herds supplying the cities with milk should be regularly inspected, and tuberculous animals removed from them. Since the destruction of an animal suffering from tuberculosis is for the good of the public, the animal should be paid for out of the public funds, and a generous appropriation should be made for this purpose by every State legislature. Concealment of facts, or knowingly selling the milk from a tubercular cow, should be a punishable offence. Every veterinarian is familiar with cases in which tuberculous animals have been sold as healthy, sometimes when the disease was known to the owner, and sometimes in ignorance.

Such a bright example of public spirit as that displayed by Mr. Gillingham is of the rarest order. He ordered the slaughter of thousands of dollars worth of cattle, the result of ten years of intelligent and careful breeding. These cattle, at the time of their slaughter, could have been sold at public auction for prices as high as any of their class; but rather than spread the disease they were sacrificed in the interest of science. The gain to science has been material, and if this addition to our knowledge shall be a step leading up to the passage of efficient laws relating to tuberculosis, Mr. Gillingham's sacrifice will not have been of local importance alone, but will be a blessing to every cattle breeder and consumer of cattle products in the United States.

NOTES ON A CASE OF LINGUATULA TÆNIOIDES, OR SO-CALLED PENTASTOMA TÆNIOIDES, IN A COLLIE DOG.

BY JAMES McI. MCCALL, M.B., C.M., M.R.C.V.S., GLASGOW VETERINARY COLLEGE.

ONE evening a sable collie dog was brought to the Veterinary College, Glasgow, by his owner, who, upon inquiry, gave the following particulars:—

The animal was a house-dog, and had been in his possession since its birth three years ago. Nothing unusual had been noticed about it until the week previously, when it had been seen to snap at the children and walk around the room in a peculiar manner, occasionally coming in contact with the table or a chair.

Physical examination showed the animal to be well nourished, and, with the exception of a dull listless look in his eyes, nothing abnormal was noticeable. When made to move about he walked unsteadily, and always with a tendency to turn to one side, viz., the left, in a circular manner. I tried to make him turn the other way, but he would not, and when I persisted he hung back and endeavoured to pull his head out of the collar.

This was a particularly marked symptom, and reminded one very much of a sheep affected with "sturdy."

When spoken to he noticed the speaker, but did not incline to make friends.

On the owner calling, he was informed that the symptoms at present pointed to a brain affection, but if he returned in a few days, then a more definite opinion as regarded the prospects of recovery would be given him.

In the meantime a dose of purgative medicine had been administered, and the animal placed under close observation.

The bowels acted, but the symptoms did not improve; in fact, they became steadily worse. Such being the case, I advised the owner to consent to have the dog destroyed, which he did. However, the creature was kept under observation for four weeks before he was destroyed, as I was interested in the case. During that time there were some interesting features noticed. After dusk he used to howl and make night hideous, and sometimes in the morning we found that he had slipped his head through the collar, though this was firmly strapped. He also frequently was the subject of a fit, and when so affected behaved in the following manner:—

He ran back to the full extent of his chain and tried to slip his head, pulling, wriggling, and howling; then he would throw himself over on his side, and remain lying in a languid, sleepy state for an hour or so, after which he seemed to recover.

A few days before he was destroyed (by the administration of prussic acid), he seemed to be improving, and knew his name when called; he also could turn either way, and did not tend to run against things; but we noticed that he trotted in a curious manner, sometimes crossing his limbs, and now and again his legs gave way and he fell. It was also observed that, when he scratched himself, he generally fell on his side.

On *post-mortem* examination the brain and spinal cord were, as far as could be judged by the naked eye, perfectly healthy and normal in every respect; but that which attracted particular attention was the presence of two parasites, one in

each middle meatus of the nasal cavity close up to the ethmoidal cells—the one in the right meatus being dead, although not much altered, while the one in the left was living and moving.

These parasites were of the following dimensions:—The living one was $2\frac{1}{4}$ inches in length, by $\frac{3}{8}$ths of an inch at its broadest part. The dead one was $1\frac{1}{2}$ inches in length, and $\frac{3}{8}$ths of an inch at its broadest part. The body was greyish-white in colour and very elongated, of a worm-like appearance, rounded on the dorsal surface, and nearly plane on the ventral, with an anterior extremity broad and rounded, and a posterior extremity thin and attenuated, and was made up of about ninety rings.

From the appearance of these parasites, I have no hesitation in saying that they are specimens of the *Pentastoma tænioides* of Rudolphi, or, as they are now more correctly denominated, the *Linguatula tænioides* of Lamarck; although the symptoms said to arise from the presence of these parasites, and described in the most recent publication on this subject, viz., Dr. Fleming's translation of "Neumann's Parasites and Parasitic Diseases of Domesticated Animals," were not specially noticeable.

DIABETES MELLITUS IN THE HORSE.

BY VETERINARY-CAPTAIN J. A. NUNN, F.R.C.V.S., D.S.O., PRINCIPAL LAHORE VETERINARY SCHOOL; AND VETERINARY-LIEUTENANT L. I. BLENKINSOP, VETERINARY SURGEON TO THE PUNJAB GOVERNMENT AND PROFESSOR LAHORE VETERINARY SCHOOL.

IN England Diabetes Mellitus in the horse is very rarely met with, and in the professional literature at our command we can find only one case mentioned in Robertson's "Equine Medicine," page 322. A case was reported in the VETERINARY JOURNAL for June, 1891, as having occurred in the clinic of this College, and since then two others have come under our observation, in which Fehling's test demonstrated the presence of sugar in the urine. We cannot help thinking that the difference in the diet of horses in this country to that of those in England accounts to a great extent for the apparent prevalence of the disease in India.

We have both for a long time suspected that horses in India suffered more from Diabetes Mellitus than is generally supposed; but as one is so much isolated when performing military duty in this country, it is rarely possible to obtain a second opinion on obscure cases; so that on the face of state-

ments from well-known authorities, we have hesitated to record our individual observations. As is perhaps known, the chief grain diet of horses in India, and especially in Bengal, is grain, *Ciner arietinum*, one of the *Leguminosæ;* and this may have something to do with it. Another cause may be the practice native grooms have of giving "ghoor" or country sugar to horses, with the object of improving their condition; but as this is given without the knowledge of the owners, it is impossible to detect it, or to form an opinion as to how far it may have influenced the appearance of sugar in the urine of the cases recorded.

In one case, that of a bay country-bred mare, there was amblyopia affecting both eyes. The symptoms observed in this instance were sluggishness of both pupils to the stimulus of light, with paleness of the optic disc as seen on ophthalmoscopic examination. The owner of this patient stated that he had noticed for some time that the mare had become frightened, more especially at distant objects, and, as he said, now shied very badly. The animal was emaciated, and it was on this account that she was sent for treatment. When the sluggishness of the pupils was discovered, then an ophthalmoscopic examination was made of the eyes. From the condition of the disc, as well as the history of the case, Diabetes Mellitus was suspected, and the urine was therefore carefully examined.

This case is only one of many which have, during the past year, brought strongly before us the great assistance in diagnosis that can be obtained from careful ophthalmoscopic inspection of the eyes.

EFFECTS OF KEROSENE ON THE SKIN.

BY VETERINARY-LIEUTENANT H. T. PEASE, A.V.D., SUPERINTENDENT OF BACTERIOLOGICAL SURVEY OF INDIA.

THE application of kerosene oil to the skin of the horse as a curative agent for many skin diseases, and more especially for those of a parasitic nature, is very common indeed, both with natives and Europeans in India. Text books and popular works often recommend the use of kerosene oil, but they give, as a rule, no directions for the application of the remedy; and hence it is that we are constantly meeting with cases resembling the one now about to be related of greater or less severity, according as the application of the agent has been copious and extensive, or slight and only over a small surface.

When large quantities of kerosene are applied, generally over the surface of the body, poisoning may occur. M.

Mégnin records, in the *Bulletin de Med. Vétérinaire*, a case in which five horses had been poisoned, and he describes the symptoms as follows:—"On my arrival, I found two horses lying all their length on the litter, appetite lost, unable to rise, and having a weak, thready pulse, violet conjunctivæ, complete insensibility over the loins, and the skin covered with scars. Three others near these were presenting a continual agitation of the limbs; they had slight œdema under the belly and on the limbs, and general symptoms resembling those presented by the first two, but less intense." When the remedy is applied in some quantity over a large extent of the body, this intoxication of the animal is very often met with in India.

The case—an illustration of which has been sent—is one in which the owner of the horse—a Mahommedan gentleman—having read in a popular work that kerosene was "good for mange," applied a quantity with moderate friction over the neck, chest, and shoulders of the horse and repeated the application on the second day. After the second application the horse seemed to be suffering from acute pain, and became very dull and stupid. The owner, fearing that some mistake had been made, brought the horse for opinion. On examination the animal was found to be dull and heavy, the eyes half-closed, and conjunctivæ deeply injected; the pulse was small and irritable. The skin showed signs of violent inflammation all over the neck, breast, and shoulders, also over a part of the chest which was much swollen and œdematous, and very hot and tender. The treatment adopted was simply to wash the skin with warm water in which bicarbonate of soda had been dissolved, and then apply a liniment of castor oil, bismuth, and belladonna, as well as giving a saline aperient internally. There was no immediate danger from poisoning, as the application of the oil had not been over a sufficient extent of surface, nor in sufficient quantity.

The skin continued to thicken and inflame, and the whole of the epidermis over the part being removed, the dermis was exposed, showing a deep-red or violet tint and an irritable surface; œdema of the fore-legs and underneath the abdomen was marked and troublesome. The majority of the hair-follicles are destroyed, and a permanent blemish will be the result.

This is only one of some scores of such cases which have come under my notice, and I think it justifiable to bring the dangers which attend the use of kerosene oil on the skin of the horse to notice.

THE CASTRATION OF THE DOMESTIC ANIMALS.*

BY PROFESSOR DEWAR, F.R.C.V.S., ROYAL (DICK'S) VETERINARY COLLEGE, EDINBURGH.

LONG before Æsculapius practised the healing art, or Homer sang his immortal strains, man had caught and domesticated several of the different species of animals he found roaming at large in the wilds around him. And history teaches that he had at a very early period resorted to the process of emasculation, to render them more docile and more manageable.

The castration of horses does not appear to have been so general amongst the nations of antiquity as was that of bulls, and indeed is not so common at the present day. But in the British Isles the castration of the animals of the farm, except those intended for breeding or to be fattened for slaughter at an early age, is all but universal. In speaking of castration, it must be understood that our remarks refer entirely to males; the scope of our paper not permitting us to enter on the analogous operation in females. Although various methods have been tried for the removal of the generative impulse and its accompanying spirited temperament, it has been found that nothing but complete removal of the generative or sperm glands—the testicles—gives satisfactory results. The methods adopted for effecting this purpose throughout the world are too varied to enumerate, even supposing we knew one-half of them. But with the progress of education and the advancement of science, they are becoming fewer in number and more certain in their results.

These earlier methods were of the rudest and roughest description, and included the constriction of the entire scrotum and contained testicles by a cord or ligature, until the whole mass sloughed off; also their compression in a clam with a like result; the cutting into the scrotum and the pulling away of the testicles by force—in some parts of the country they are still pulled away, especially in the smaller animals, and often by the teeth; the beating of the spermatic cords with a wooden mallet against a block of wood. This method is referred to by Mr. Jas. Tindall, of Golspie, in the *Veterinarian* for 1842, as being then practised in the extreme north of Scotland.

In our own country, at the present time, the methods of operating usually employed are mostly reduced to five.

* Read at the Meeting of the National Veterinary Association, at Glasgow, on August 3rd.

These are the actual cautery; ligature of the spermatic cord or of the artery alone; compression by the wooden clam, plain or armed with caustic; torsion; and the ecraseur.

Scraping through the cord with a blunt knife is still occasionally employed, although oftener in bulls and the smaller animals than in the horse, and, as we before mentioned, the pulling away of the testicles after the division of their non-vascular attachments by the knife.

Before proceeding to consider the operation of castration, we will glance briefly at the anatomy of the parts concerned; and our remarks will here refer more particularly to the horse. (Here follows a sketch of the Anatomy.)

In going on to consider the operation of castration, we would point out that the chief aim and object regulating the adoption of the various methods employed is to arrest hæmorrhage. Thirty years ago at any rate, given a normal healthy subject, little else was feared, and if the operation was successfully performed as far as that was concerned, any untoward result was generally set down to mistakes in feeding or management, exposure to cold or wind, chills, east winds, or some malign influence in the atmosphere.

The general practitioner must be prepared to castrate any animal when asked. Cats are frequently castrated to prevent their acquiring wandering habits, and sometimes we are asked to castrate dogs. In these animals, all that is necessary, after having made an incision through the scrotum and exposed the testicle, is to insert the point of the knife through the fascia behind the spermatic cord and divide all the tissues behind that, then scaping through the cord with a blunt knife or the thumb nail. In the cat, it is sufficient to grip the cord firmly between the thumb nail and fore finger of the left hand, above the epididymis, and pull the testicle away with the right. Ligature of the cord is recommended in dogs, but we don't think it necessary, although in large dogs we have sometimes used the ecraseur. These animals dress their own wounds and require no attention.

Pigs are generally castrated at from two to four weeks old, or before they are weaned, and the same method as we have already described for operating on the cat and dog gives satisfactory results in the pig. The scrotum of the pig is situated more in the perineal region, and as they are perhaps of all animals most subject to scrotal hernia, it is very customary to press the testicle towards the anus before cutting down upon it, so as to obviate any risk of descent of bowel. The operator should, however, be provided with a needle and

thread to stitch up the wound in the skin if necessary. No after treatment seems required. This method certainly does not harmonise well with the principles of modern surgery, but the result must be held as justifying the means. An experienced practitioner of our acquaintance is in the habit —when the hernia is confined to one side—of removing the testicle on the sound side first, and the second one through the same wound by a small incision in the septum. This method certainly diminishes the risk. We remember once seeing a case of tetanus in a young pig after castration. It was lying extended like a greyhound at full gallop, and so stiff it could be rolled round like a log.

The castration of sheep and goats, the former at any rate, is or more importance, and requires more consideration. We have little experience of the operation in the goat, but are not aware of anything that requires special treatment. Lambs are castrated at from ten days to six weeks old, and often too little care and attention bestowed upon them. Where sheep are bred in large numbers the lambs are usually left untouched until their dams are clipped, and the operation of docking is performed at the same time It is often done in the roughest manner by the shepherds amidst the hurry of the shearing and the bleating of the sheep. The din has to be heard to be understood, and is due to the separation of the ewes from their lambs, and the inability of the lambs to recognise them when set at liberty. Some shepherds, after exposing the testicles, and without dividing any of their attachments, will sieze them both in their teeth at once and pull them away. Notwithstanding all the hurry and roughness, the mortality is not great. A few of the lambs will be stiff and unwilling to move, and the shepherd will catch them and open the wounds if they seem to require it. But now and again the results are less favourable; in two or three days, and even shorter time, it is but too evident that there is something seriously wrong. The little things are stiff, breathing quickly and unwilling to move, stand about with their backs up and heads hanging down, and refuse to follow their dams. On examination the scrotum is found to be very much swollen and discoloured, the wounds open with some coagulated blood in them, while the discolouration extends to the posterior part of the belly and even on to the thighs. Death seems inevitable. They are dying in twos and threes, and the mortality may run from twenty to sixty per cent. On making a post-mortem examination it is found that the blackening extends up the cords, on to the bladder, and

always more or less to the contiguous organs in the abdomen.

There is always some red-coloured fluid in the peritoneum, but varying much in quantity, and generally peritonitis is not very distinct. The lambs are said to be dying from inflammation and mortification. True enough gangrene is present, but inflammation is most conspicuous by its absence. Death is evidently due to malignant œdema starting from the operation wounds.

What is the cause of this striking mortality? It will be observed that the operators have often just been busy shearing, handling perhaps an occasional gangrenous udder or rotten foot, while it is well known that cleanliness is not a ruling passion with many of them. We think, therefore, that infection from the hands of the operators is a not infrequent cause of these unfortunate occurrences. But we also think that the weather has more to do with these results than might be expected. Many lambs, especially of the short-wooled breeds, such as Shropshire Downs, have a thick close coating of wool over the scrotum. When the lambs are castrated there is always some hæmorrhage, and instead of dropping clear away from the animal it soaks in amongst the wool, until the outside of the scrotum gets saturated with it. If the weather is close and muggy, or, what is perhaps even worse, frosty nights with bright sunny days and not a breath of wind, this blood never dries, heat and moisture are present, the conditions most favourable to the development of micro-organisms; and decomposition sets in, sufficient in itself to account for the heavy mortality, even although no other organism gains access to the wounds.

We can remember when we thought the practice some shepherds have of cutting a piece off the point of the scrotum cruel and barbarous, but it certainly gives a better chance of the blood dropping clear away, and not soaking in amongst the wool. Certain we are that were the scrotum closely shorn, and the lambs castrated in dry bracing weather, the mortality would be immensely reduced.

Much more care is given to the castration of rams. They are castrated in nearly as many ways as the larger animals, and not with any less risk.

The castration of calves is considered a very simple matter, and is undertaken with confidence by every other farmer and cattleman; and really, when they are castrated at from fourteen to twenty-one days old, the risk is very slight. The operation is generally performed by the method which the

French term *arrachement*—separation of the non-vascular part by the knife and the pulling away of the cord. Others scrape through the cord as already described; while a third method combines scraping with torsion. On cutting through the scrotum and non-vascular attachments of the testicle, the cord is striped upwards with the thumb nail until about the termination of the convolutions of the spermatic artery, while at the same time the testicle is pulled down. The testicle is then twisted round several times, the twists running naturally to the slenderest part of the cord. The twisted portion is then scraped through with the thumb nail, or after it is well scraped the cord is broken off about the lower end of the twisted portion.

After calves have attained an age or size when they are too big and heavy to be thrown by one man without any appliances, they are seldom cast for the operation. As they stand tied in their stalls one man catches them by the nose, while another, holding aside the tail, stands opposite the flank, both preferably at the left side, keeping them up against the "treviss," while the operator stands behind, and to the left, so that he can grasp the scrotum in his left hand, using the knife with his right. He performs the operation as already described. In making the first incision through the scrotum when the animal is standing, the operator must observe to twist the testicle round a bit inside the scrotum as if the incision is made straight behind, although at the point of the scrotum the incision will be right over the attachment of the tunics to the testicle and the testicle will not slip out of the operation wound, or not until another incision is made through the tunics a little to one side. It is very seldom that the animals kick or struggle to any extent or throw themselves down, but when they do they must just be allowed to get up again. In castrating an aged bull the same system may be adopted, but it will be necessary to put a strong halter on his head, and if there is not a ring in his nose, put in a spring catch "humbug" to pull his head up to the rack on the same side as the operator elects to stand. We have operated on heavy four-year-old bulls in this way quite successfully, but it is wise to see that their fastenings are substantial. Although a very safe operation in calves, we have heard of death resulting within twenty-four hours, when on *post-mortem* examination no internal hæmorrhage or anything else could be seen to account for death. And we can well remember an unfortunate case in which we castrated three "piner" one-year-old stirks and two calves at one

farm. Called on the twelfth day we found one of the stirks very ill with tetanus, and it died in a few days. Called again two or three days after to another of the stirks, a thin, stunted creature, we found it suffering from pneumonia, and it died within a week; while the third stirk had a swollen scrotum and inflamed cords and did not thrive for some time. The two calves, the last to be castrated, did well. When hæmorrhage results in the bull it is often checked by putting a thick soft ligature tightly round the neck of the scrotum, leaving it on for twelve or fifteen hours.

Going on to castration in the horse, we must consider first the age at which it is best to operate. Foals very often have scrotal hernia; in fact, it is quite common, and is not thought very much about. So that in operating on foals a great deal more risk is incurred from hernia than in older animals. We also find that the effects of the operation, apart from the risks incurred by hernia, are felt about as much as in yearlings. It is also the fact that in nine cases out of ten these hernias disappear in the winter months. Mr. Crabb, New Aberdour, writes:—"I have castrated foals to please my "clients, but do not approve it. There is not the life and "spirit left in them that we see and admire in those castrated "later." After the first winter is past, and before the colt has got much grass, is certainly the best time to operate. If he has been some time at grass he usually gets fatter, the tissues get softer and looser, the animal in gaining condition loses tone, and there is more risk of hæmorrhage and swelling. If, then, we are satisfied that colts are better to be left until they are from nine to twelve months old, would it be better to leave them until they are still older? It is argued that colts which are weak in the neck and light in the shoulder should be left until they are two years old, in order to improve them in that respect. But, really, all the improvement will be immaterial, with the likelihood of any improvement there is being at the expense of leaving the gelding with a stallion-like appearance. Besides, every week that passes increases the value of the animal, or, at any rate, the expense of his keep, whereby the money risk becomes greater. But we also hold that, apart altogether from the increased value, the risk from the operation is increased. The experience of the Insurance Companies evidently agrees with this, as they increase the rate per cent. for insurance the older the colt is. Little preliminary treatment is required for ordinary healthy colts before the operation. If they have been running out they ought to be taken in the night before

and have only a very light breakfast the morning of the operation. They are best to be in only fair condition. Grossly fat animals make very bad subjects. We prefer them rather lean, provided they have been getting plenty of exercise and have some spirit in them. But it is bad policy to starve an animal in order to reduce it for the operation. Rather alter the keep, and do the reducing by plenty of exercise or work, so as to improve the tone. We would refuse to operate on an animal that had been standing in the house, fed like a fat bullock, and getting no exercise.

Besides observing that the colt is healthy, the operator should also observe that there are no colds, influenza, or strangles about the place where he is operating that the colt could by any possibility come in contact with. He should not operate in any place without healthy hygienic surroundings; nor after making a *post-mortem* examination; after a parturition case with a dead fœtus, after removing a placenta, after attending a case of metritis, influenza, or strangles; and other cases will occur to an intelligent surgeon; until he is satisfied that his hands are cleansed with some thoroughly reliable disinfectant. But he should shun especially metritis and strangles as he would poison—which indeed they are—or as the accoucher does puerperal fever. It is our invariable practice to use an antiseptic solution at every castration in the horse. We wash our hands with warm water and soap after the colt is secured, dry them and rinse them in the solution. We always dip our instruments in it, and re-dip them at every application, as we also do with our hands at every fresh hold or touch that has to be made while operating, and moisten the skin with it over and for some distance around the scrotum. It may be felt awkward doing it at first, but habit becomes second nature, until the operator does it almost unconsciously. When we first began this system we used a solution of carbolic acid; we next used mercuric chloride, but it has a disagreeable action on the hands, and is also bad for the instruments. We have now been using creolin for some years, but while it is pleasant to use and has no injurious effect on the skin or instruments, we don't consider it such a reliable disinfectant as either of the other, and always use mercuric chloride when castrating rigs, or at any other important operation.

(To be continued.)

CONTAGIOUS FOOT-ROT IN SHEEP.*

BY PROFESSOR BROWN, C.B.

In the history of sheep-husbandry, foot-rot has always been referred to as a scourge of the race, causing serious losses wherever it appears, and in some parts of the world the malady assumes a degree of malignancy which entitles it to be classed among the most virulent of animal plagues.

The different views which have been entertained as to the causes of the disease, its nature and contagious character, have apparently arisen out of a misconception of the fact that several diseases of the foot of the sheep have been described as foot-rot, most of them depending on primary injury to the hoof, leading to inflammation of the tissues within the horny covering.

Contagious foot-rot, in the first instance, invariably exhibits itself in the skin between the claws, whence it extends to the interior of the foot, and causes the shedding of the hoof from the pressure of the fungoid growths from the secreting membrane of the internal foot.

Disease beginning in the Hoof.

A remarkable instance of the first form of foot disease was met with some years ago in Somerset and Dorset, and the following illustrations will show the changes which had occurred.

Three distinct conditions of the horny covering of the foot were recognised. The disease commences in the hoof itself, as has been stated, the alteration of the internal structures taking place subsequently. One condition extremely marked is the decay of the horn at the toe, and the passage of particles of sand and dirt through the openings in the shrivelled hoof at the toe into the interior of the foot. See Fig. 1 (1).

Then a second condition is the overlapping of the lower edge of the wall of the hoof, illustrated in Fig. 1 (2), leading to the retention of grit and sand, which, owing to the pressure on the base of the foot in the ordinary course of movement, is driven through the spaces between the horn fibres into the interior of the horny cavity.

A third condition is the existence of a minute fissure in some part of the hoof, commonly at the outer surface of one of the digits, indicated on the white hoofs of the Dorset and

* From the "Journal of the Royal Agricultural Society" for June, 1892.

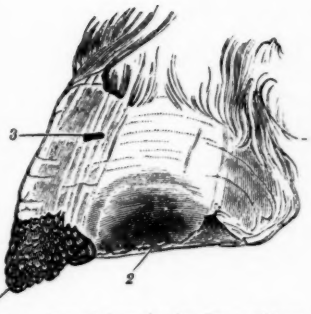


FIG. 1.—Foot of sheep showing disease of horn.

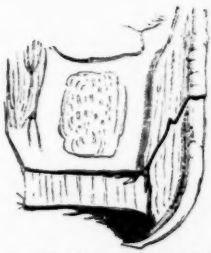


FIG. 2.—Section through the foot showing a crack extending through the wall.

Somerset sheep by a dark line, sometimes not more than the sixteenth, and rarely more than the eighth, of an inch in length, as shown in Fig. 1 (3). The consequence of these changes of structure is exactly the same in each case: the passage of gritty material into the interior of the horny box, either through the decayed horn at the toe, or through the sole under the overlapping wall of the foot, or through the small fissure in the wall of the hoof, which is the entrance to a crack which passes into the foot, as shown in Fig. 2.

Inflammation and exudation, and, in short, the characteristic results of the inflammatory process naturally follow the introduction of gritty particles into the interior of the horny box. This form of foot-rot may be classed with the several diseases of the foot due to injury from the constituents of the soil, thorns, broken glass, nails, and generally

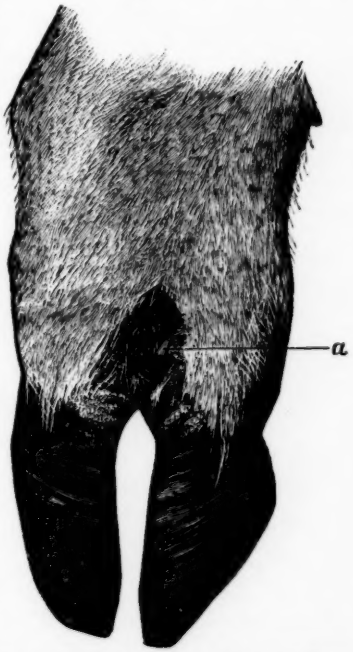


FIG. 3.—Foot of sheep showing early stage of disease affecting the skin between the claws.

to any agencies which interfere with the integrity of the structure of the hoof, and thus expose the internal tissue to injury. Neither of these affections is in any sense contagious,

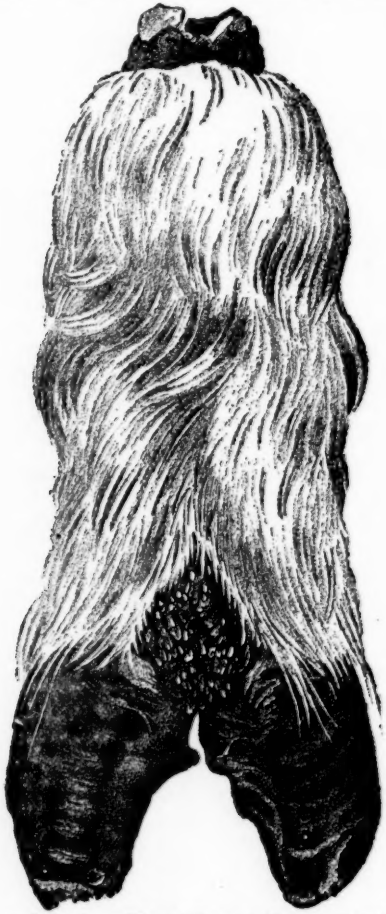


FIG. 4.—More advanced form of disease of skin between the claws.

and all of them may for the present purpose be excluded from consideration as not coming within the definition of contagious foot-rot, which is the subject of this paper.

Contagious Foot-rot.

At the outset, Foot-rot can be distinguished from all forms of foot disease of the sheep with ease and certainty, and the practical man searching for signs of the affection, looks at the skin between the hoofs, and seeing a little moisture or white discharge, with very minute pimples covering the skin, is aware that the disease exists. In Fig. 3 this condition is shown as well as it is possible to indicate it by the aid of the

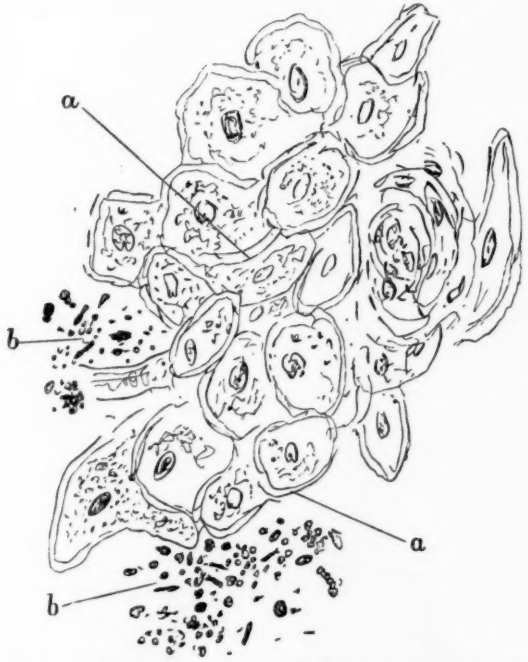


FIG. 5.—Scraping from fungoid growths. *a*, *a*, Epithelial or horn cells, magnified 200 diam. *b*, *b*, Micro-organisms, magnified 1,000 diam.

pencil. Daily observation will prove that the disease of the skin sometimes advances rapidly, and assumes a very marked character, the whole surface becoming covered with elongated warty growths, as seen in Fig. 4. In most instances the inflammation extends to the inner side of the internal structures of one claw, and the hoof becomes disconnected from its membrane, which is covered with long fungoid growths, as they

are called—in reality, horn fibres so rapidly produced, that they are wanting in solidity. The whole product of the morbid state is, indeed, a mass of epithelial cells, as shown in Fig. 5. When the disease runs its course unchecked, the

Fig 6.—Foot-rot in an advanced form; the secreting membrane is covered with fungoid growths.

horn of the diseased claw is loosened from the inner surface, and in a short time is entirely thrown off, and a new hoof begins to grow from the coronet downwards. Fig. 6 shows

this change. If the hoof is not thrown off quickly, it grows with rapidity, and is more or less distorted in form, as seen in Fig. 7. The horn tufts or fibres sprouting from the diseased membrane are seen distinctly in Figs. 6 and 7; and in the next illustration (Fig. 8) a small portion of the diseased membrane has been hardened and cut into fine sections, one of which is shown, exhibiting very distinct horn structure.

FIG. 7.—Distortion of hoof in an advanced form of foot-rot.

In reference to the changes which are illustrated in the last three drawings, it may be remarked that similar changes are seen in other inflammatory diseases of the foot of the sheep, also in foul in the foot of the ox, and in canker in the foot of the horse. It is therefore necessary to lay stress on the statement that the characteristic signs of contagious foot-rot are most perfectly defined in the earlier stages of the disease.

Evidence of the Contagious character of Foot-rot.

Among the inquiries which have been undertaken to solve the disputed question of contagion, reference may be made to three or four sets of experiments which have extended over a long series of years.

FIG. 8.—Section of fungoid growths, horn fibres.

In 1867, at the instigation of the members of the Maidstone Farmers' Club, who sent cases of foot-rot to the Royal Veterinary College for the purpose, an investigation was carried on for twelve months, and the results were sufficiently definite to

justify the conclusion that the disease can be produced by contact with an infected animal, and also by the application of the discharge from a diseased foot to the skin between the digits. Inoculation of the discharges by puncturing the skin, and in other cases by removing a small portion of the hoof of a healthy foot and applying the matter to the exposed secreting surface, was generally followed by healing of the injured part; but some days afterwards the skin between the digits became moist and swollen, and the early stage of foot-rot was developed, but did not advance beyond that stage, although no means were taken to check it.

(To be continued.)

Editorial.

THE SUPPRESSION OF GLANDERS.

THE very serious prevalence of Glanders in and around London and elsewhere in the United Kingdom, has become a matter demanding the immediate attention of those who are responsible for the health of the domestic animals, as well as those who have to do with the sanitary condition of the human population. We have constantly for years referred to the insufficient legislative measures for coping with this dangerous and destructive malady, and the very perfunctory manner in which even these are often carried out. The extraordinary neglect of this disease by those who should control it is inexplicable; for surely the law with regard to it might have been amended long since, as it is based upon an erroneous notion of the nature of Glanders, and one which has been proved to be mistaken more than fifty years ago. Again and again this has been pointed out, and yet nothing has been done to rectify the blunder, until now there is a very grave condition to be faced, and which it will need much determination and trouble to ameliorate. This disease has never been dealt with in a sufficient manner by those who had the framing and enforcing of the Contagious Diseases (Animals) Acts; and yet there has been no reason why it should not have been eradicated at any period within the last thirty years at least. That it can be suppressed there is not the least occasion for doubt, seeing that it has been entirely extirpated in the army at home for the last four or five years, and knowing that it cannot be spontaneously generated. But the procedure

must of necessity be different to that applicable to the contagious diseases of cattle and sheep, and will prove more tedious and exacting. Where the malady exists among any considerable number of horses, these cannot all be isolated or prevented from working, as horses are only useful for labour, and this utilisation entails mixing more or less intimately with other animals on the highways and byeways. Neither can it be advisable to slaughter studs of horses wholesale, as has been done with herds of cattle and flocks of sheep among which a case or two of contagious pleuro-pneumonia and foot-and-mouth disease had appeared. Horses cannot be used for human food in this country, and therefore their carcases are of very little value, while the loss of their services would mean something like ruin to their owners; as, even if compensation for the actual value of the animals were allowed (and there are serious objections to this), it would not cover the loss resulting from the cessation of traffic. So that it will be found that suppressing Glanders is a much more tedious operation than in the case of foot-and-mouth disease, for instance, a very small invasion of which has, nevertheless, required several months to repel, and has cost a heavy sum and the sacrifice of an immense number of cattle and sheep.

We need not allude to the measures required for dealing with Glanders, as they are well known to those acquainted with its nature and mode of extension; but as it is chiefly fostered in unclean and insanitary stables, these should receive most attention, and be made healthy and habitable. Much has been said about the danger of maintaining water-troughs, because of contamination of the water by affected animals, and no doubt this danger does exist; but there is also the risk of infection from actual contact with diseased horses at these places, where several may sometimes be seen drinking at one time, and with their heads close together—perhaps rubbing noses. To obviate these dangers, every horse-conveyance should carry a bucket with which to water the animals, the water itself being obtained from a tap or stand-pipe.

A great difficulty to contend with in combating Glanders is discovering its existence or diagnosing it in certain cases, and already this difficulty is making itself painfully apparent in the conflicting opinions given by veterinary surgeons in law courts. It is to be hoped that the use of mallein in doubtful or suspected cases will abolish this obstacle to effective suppression, and that in the course of a few years the disease will be as extinct among the horses of civilians as it now is among those of the army.

THE PREPARATION OF MALLEIN AS A TEST FOR GLANDERS.

In the VETERINARY JOURNAL for last month, reference was made in the editorial article to the value of mallein as an aid in the diagnosis of glanders, and special allusion was directed to the evidence furnished by Nocard, which was of a very convincing character. Seeing the serious extent to which the disease now prevails in London and some other parts of the United Kingdom, we think it necessary again to refer to this subject, and to deal particularly with the preparation of the mallein, according to Nocard's directions. That excellent authority employed material prepared at the Pasteur Institute, Paris, by M. Roux, and he asserts that by its use, and the observance of certain precautions which will be judicated presently, he was able with certainty to diagnose the existence of glanders in cases in which all the known diagnostic means would have failed.

Nocard justly remarks that in such a matter it is important to employ always the same product, or at least a product the potency of whose action will be always sensibly equable. The method of proceeding is as follows: After having exalted the virulence of the glander bacillus by numerous successive transmissions, so as to render it capable of killing rabbits, and even white mice—which are usually refractory to its action, in less than thirty hours—it is grown in peptone-glycerine *bouillon*, the same as is used for the cultivation of the bacillus of tuberculosis. After remaining for a month in an incubator at a temperature of 35° C., the cultures are sterilised at 110°, filtered through blotting paper, then concentrated *in vacuo* by evaporation until reduced to one-tenth of their original volume. In this way there is obtained a syrupy fluid, dark-brown in colour, of a peculiar odour, and somewhat viscid consistency. The fluid contains about 50 per cent. of glycerin, and keeps fresh for a long time if protected from the air and light. It is employed in dilution, with ten times its volume of 0·5 per cent. solution of carbolic acid.

In proceeding always in the same manner, there is a chance of obtaining a product, the activity of which is always sensibly the same. Even with healthy horses, when a large quantity of mallein—1 cubic centimetre, three-fourths, or even one-half cubic centimetre—there is induced at the same time as a local lesion (an œdematous tumour, hot and painful, the size of a fist, disappearing without suppurating or leaving any trace in two or three days), an intense febrile reaction that becomes manifest about the eighth hour after injection; this lasts for twelve or fifteen hours, and reaches 1·5° to 2° or more above normal, during which the animal is dull and prostrated, shivers and trembles, and scarcely eats anything.

But if only one-third or, better, one-fourth of a cubic centimetre (0·25 c.c.) is injected, the reaction produced in *healthy animals*—asses, mules or horses—is absolutely *nil*; the local lesion is scarcely visible or is completely absent, the temperature remains normal, and the general condition is not modified. If, on the contrary, this small quantity of mallein (one-fourth of a cubic centimetre) is injected into a *glandered* horse, then the effect produced is remarkable. In a few hours a voluminous tumour appears at the seat of inoculation; this swelling is œdematous, hot and painful, and it may acquire enormous dimensions, though it never suppurates. The animal at the same time is greatly depressed, its face is pinched, the nostrils are dilated, the expression anxious, flanks retracted, and respiration hurried; while the olecranian muscles and those of the stifle are in a state of constant tremor, the whole body at times being seized with violent general tremblings. The temperature rapidly rises 2°, 2·5°, 3°, or even more, this elevation being more rapid than that caused by tuberculin; and while already notable eight hours after injection, it attains its maximum in about ten hours, then it drops slightly, but

remains high for twenty-four, thirty-six and forty-eight hours. The variations in the number of pulsations generally coincide with those in the temperature. In certain cases the reaction produced by the mallein has been so severe that the animals would certainly have succumbed to it in a short time, had they not been promptly killed.

There is now, unfortunately, ample opportunity to test this reagent in London; and as it is announced that M. Roux of the Institut Pasteur, Paris, will supply veterinary surgeons with mallein (as well as with tuberculin) and directions for its employment, this opportunity should be seized to investigate its merits and enlist its services in enabling us to get rid of a most damaging and dangerous disease.

In the meantime we may give Nocard's conclusion as follows: (1.) The subcutaneous injection of Roux' mallein, in the dose of 0·25 c.c. causes in glandered horses an intense febrile reaction after eight hours, and lasting for several hours. (2.) If the elevation of temperature exceeds 2°, it may be affirmed that the animal is suffering from glanders, but if the temperature does not vary or rises less than 1°, it is not glandered; while if the elevation is between 1° and 2°, it is impossible to decide whether glanders is present, and the horse should be regarded as suspicious. (3.) In every infected stable it would be very advantageous for the owner, as well as for the sanitary service, to submit all contaminated horses to the mallein test; observing them closely, and killing, or at least isolating, all those which give the characteristic reaction; in any case, glanders will not make more victims.

ANIMAL TUBERCULOSIS IN DRESDEN.

In a recent number of the *Zeitschrift für Fleisch und Milchhygiene*, Dr. Edelmann, Sanitary Veterinarian for Dresden, furnishes a report of observations made at the Dresden abbatoir during 1891, chiefly from a statistical point of view. With regard to Tuberculosis, he found it as follows:—

Cattle	2387 cases,	or 14·4	per cent.
Pigs	730 „	1·09	„
Calves	19 „	0·05	„
Sheep	19 „	0.07	„

With regard to the extent of the disease in these animals, he found only one organ affected in 1920 cases; in 150 cases he found several organs involved in one cavity of the body, and chiefly in connection with the serous membrane, in which the disease was much diffused; in 248 cases several cavities were invaded; in 62 cases it was generalised, and in seven the mammæ were involved.

With respect to sex, tuberculosis was noted in—

1154 cows,	or 48·3	per cent.	of all the cases observed.
786 bullocks,	„ 32·9	„	„ „
447 bulls,	„ 18·7	„	„ „

Of 6872 bullocks slaughtered, 786 were tuberculous, or 11·4 per cent.
Of 4678 cows there were 1154 tuberculous, or 26·6 per cent.
And of 4975 bulls, 447 were tuberculous, or 8·9 per cent.

Regarding the utilization of the flesh, of 2387 tuberculous cattle 2141 were allowed to be issued for public consumption, or 89·65 per cent.; 175, or 7·28 per cent., were allowed to be sold as low class meat; and 71, or 2·97 per cent. were prohibited for sale as human food.

THE TRANSFORMATION OF SMALLPOX INTO COWPOX.

At widely distant intervals the announcement is made that some experimentalist has succeeded in transmuting or transforming variola into vaccinia, and for a time the report receives a certain amount of attention, as it is held to support the belief generally entertained among medical men, that cowpox is only smallpox passed through the cow. For years the erroneousness of this notion has been insisted upon by veterinarians, and we have for nearly twenty years contended that the change could no more be effected than the transmutation of vaccinia into variola could be. In the *Lancet* for July 16th, Dr. Hime, of Bradford, claims in a very ostentatious and decided manner, to have finally settled the question, by producing cowpox in a calf which he inoculated with smallpox matter. Those who are acquainted with the subject and the history of similar attempts will, on perusal of his communication, conclude that there is no reason to believe that Dr. Hime has been any more fortunate than his predecessors. He prepares animal vaccine for sale, and according to his own statements, does a large business in it; the place in which he inoculated the calf with variolus matter is that in which he inoculates calves with cowpox lymph for the production of the vaccinating material. It will be at once seen that, owing to this circumstance, his reputed success is no more to be relied upon than that of Ceeley and others, notwithstanding his assertion:—

"I believe that every reader of my experiments will feel that there is no longer room for doubt that cowpox is really smallpox which has undergone transformation in the cow. There is no weak spot in the chain of evidence, and the question may now be regarded as settled and disposed of."

There is scarcely a doubt that the calf was accidentally vaccinated, and not variolated by Dr. Hime. The following letter has been addressed to the editors of the *Lancet*:—

Sirs,—I have been much interested in reading Dr. Hime's account of his supposed transformation of smallpox into cowpox, and only wish his experiments could set at rest the question of identity of variola and vaccinia. He has done what has been already accomplished by others, and it has been pretty clearly shown that such proposed transformation has not been effected. I am still sceptical of the reality of such change, but am nevertheless quite open to conviction if Dr. Hime will afford further proof of the identity in origin of smallpox and cowpox by transforming the latter into the former. This should be easily done if there is only one virus acting in the production of both. And what about sheep-pox, which in its clinical features and morbid anatomy so closely resembles human variola? The question of identity will not be solved until cowpox can be converted into smallpox, which has not yet been done, and I am doubtful whether it will ever be achieved.

I am, Sirs, yours truly,

London, *July* 20, 1892. George Fleming.

TWO CASES OF MENIÉRÉS VERTIGO IN HORSES.

Since we first drew attention to the probable existence of Meniérés disease in horses, cases have been reported in this and other journals, which go a long way to confirm our surmise, and to prove the existence of this peculiar condition in the equine species. The most recent of these reports is that of Drs. and Veterinary-Captains Moro and Pigorini, of the Italian Army, who publish in the *Giornale di Veterinaria Militare*, for the present year, a description of the disease in two troop-horses, which, they assert, was in every way identical in its clinical features with those described by us. It is to be hoped that an opportunity may be afforded to those who meet with such cases, to make a careful *post-mortem* examination of the brain, and more especially of the

auditory apparatus, in order to ascertain wherein the cause of these peculiar vertiginous attacks lies. If they are due to reflex nervous influence, then, in all probability, the cause may be difficult to discover. That the symptoms are not due to simple and ordinary vertigo, is admitted by those who have had recent experience of such cases, although, until lately, the cases were included in the conventional and unscientific term "staggers," so commonly employed by the farriers of bye-gone days, to cover a multitude of conditions, with the pathology of which they were utterly ignorant.

GÔITRE IN THE HORSE.

In the Italian journal, *La Clinica Veterinaria*, for January, 1891, Dr. Lanzillotti-Buonsanti describes the case of a draught horse that was brought to the Clinic of the Milan Veterinary School, and which had a gôitre on the left side of the neck about as large as the head of a newly-born infant. On the right side the thyroid body was also larger than normal, though it was much less than the left one. After a careful examination, our colleague determined to extirpate the body, or, rather, both lobes of it; but in order to avoid throwing the animal into that state of cachexia which is said to result from removal of both lobes at the same time, it was decided that the left one should be first excised, the removal of the right lobe being deferred.

The animal was thrown down and anæsthetised with chloroform, the skin covering the salient part of the gôitre was deprived of its hair and well washed with naphtaline soap, then sprayed with sublimate solution, 1 in 1,000, and an incision about fifteen centimetres long made in it. Through this opening the tumour was dissected and enucleated, and the cavity left after its removal was irrigated with the sublimate solution, and subsequently dressed with iodoform powder.

The case did well, and a month after the operation the wound had completely cicatrised, and the horse could resume its work. As the right lobe did not increase rapidly and did not prevent the animal from being utilised, the owner had declined to have it also taken away when the case was reported.

Professor Piana made a microscopical examination of the excised tumour, and pronounced it to belong to the simple adenomata.

THE ASYMMETRY OF THE CRANIUM IN HORSES AFFECTED WITH EPILEPSY.

In *Il Moderno Zooiatra* for 1891, Professor Bassi, Director of the Turin Veterinary School, discusses the subject of epilepsy in horses, and recognises two forms of the disease—an incomplete form sometimes mistaken for vertigo, and a complete form in which all the signs of the disease are well manifested. He admits that it is not a frequent malady, as he had only met with fifteen cases during his long career. He did not venture to deal with the symptomatology or treatment of the disorder, as he had nothing new to propound with regard to them; his object was to draw attention to a peculiarity he had observed in the last nine cases of equine epilepsy he had encountered—the first occurring in 1886, and constantly observed in all subsequent cases—this peculiarity being an unequal or asymmetrical formation of the cranium. The asymmetry was not limited to the parietal bones, but extended to the corresponding portion of the frontals, and consisted of a marked prominence of one half of the cranium over the other—this sometimes occurring in the left moiety, in other cases in the right. In proportion to the advance of the disease and the greater frequency of the attacks, this

cranial asymmetry became more pronounced, and one side became more and more prominent than the other; but Bassi was inclined to think that this prominence was more apparent than real, and was due to subsidence or depression of the opposite side. He had the opportunity of obtaining the head of one of the epileptic horses, and, in examining this division of the skull, he was able to satisfy himself that the inequality was the result of a notable depression of the right parietal bone and upper portion of the adjoining frontal bone. The right cerebral hemisphere was also of smaller volume than the left, while it was denser in consistency, as if it had undergone compression.

Professor Trinchera, in a letter to Bassi, asserts that since his attention has been drawn to this peculiarity, he has always discovered it in the epileptic horses brought to his notice, and that it now enables him to distinguish between epilepsy and vertigo.

GLANDERS IN HORSES AND MANKIND.

LAST week we drew attention to the increasing prevalence of glanders, and the consequent greater risks of human beings becoming contaminated from diseased horses; giving, as some evidence of this, the result of a coroner's inquest on the body of a woman who had resided over a stable in which were glandered animals, by which she was infected through using water carried in the stable bucket, it was supposed. On the 1st August, another inquest was held at Hornsey on the body of a coach-builder, who had also succumbed to this loathsome disorder, which he had acquired from contact with a horse he had purchased for a few pounds, and which had been allowed to die of glanders. Other cases of death among people from this equine scourge have come to our notice, and considering the extent of the malady among horses, especially in London, it is surprising there are not more coroners' inquests. It is to be apprehended that the disease will become still more extended; for though there is good reason to believe that only a few of the cases occurring are reported by the officials entrusted with the duty of suppressing some of the contagious diseases of animals, there are indications that few of the large studs of horses are free from it; while it may be presumed that in the stables of the poorer class of cabmen and carmen, infection is rampant. A few days ago, one of the largest tramway companies in London was heavily fined for having eight glandered horses at one depôt (a driver in their employment had died from glanders), and an omnibus company has been summoned for the same offence. We have complained of the imperfect measures in force for dealing with the disease, and the very lax manner in which they are carried out; and until the authorities are compelled to exhibit more intelligence and energy, matters will certainly not mend. All glandered and farcied horses should be at once destroyed, and those animals which have been in contact or cohabiting with them, ought to be treated as suspected, and isolated from healthy horses. No sales or transfers of horses should be permitted from infected stables or studs, and compulsory notification of the existence of the disease ought to be imposed on horse-owners and veterinary surgeons. Inspection of infected stables and horses ought also to be carried out by independent authorities, who should likewise see that contaminated premises are properly cleansed and disinfected. All public water-troughs should be prohibited, and horses watered with their own buckets, filled from standpipes, which might be placed where the troughs now are, or where the street water-carts are replenished. Whatever is done should be done quickly, for the present state of affairs, due more to apathy and indifference than ignorance, is most discreditable and injurious.—*The Lancet*, August 6th.

HYPODERMIC SOLUTION OF ERGOTINE.

THIS drug is often administered hypodermically, but the ordinary solutions have been found to possess some disadvantages, such as not keeping well and leaving an induration at the point where the injection was made. Biedert has got rid of these by the following combination:—

Ergotine	1 gramme.
Carbolic Acid crystals	·10 grammes.
Distilled water	5 grammes.

TREATMENT OF BURNS.

LORDIER, in the *Bulletin Médical des Vosges*, recommends carefully washing the burnt parts with corrosive sublimate solution, then powdering them over with boric acid. The region should also be protected by an antiseptic dressing, which should be removed every second day.

Dale, in the *Deutsche Med. Zeitung*, advises merely the application of compresses which have been steeped in milk, and which should be renewed morning and evening.

THE DISINFECTION OF WALLS.

IT is stated in the *Journal de Med. Veterinaire et de Zootechnie* for July, that M. Dulcaux, after having dicarded the employment of chloric and sulphurous acids because they are difficult to apply and are irregular in their action; and also remarking that he found sprayings *(pulverizations)* with carbolic acid and lysol costly and disagreeable, decides in favour of corrosive sublimate, which is odourless and inoffensive when judiciously employed. The solution that appeared efficacious was a 3 per 1,000 one, acidulated with hydrochloric acid in the proportion of 5 per 1,000. The editors of the Journal, however, assert that for the disinfection of places occupied by animals, washings with creolin, Jeyes', or cresyl or naphto-cresyl are to be recommended.

A SUCCESSFUL CASE OF OPERATION FOR ROARING.

Two years ago we published a communication from the Duke of Westminster, having reference to a favourite hunter which had been operated upon the previous year for roaring. Previous to the operation the animal was quite useless, as it could not gallop for a short distance without exhibiting the greatest distress. His Grace described the horse, twelve months afterwards, as perfectly cured, and as having carried him during the previous hunting season as well as ever it did.

A few weeks ago the Duke stated that the horse remains quite efficient, makes no noise whatever in respiration, had performed its work well during the last hunting season, on the final day of which it carried him during a fast forty minutes' run.

THE VETERINARIAN: HIS POSITION AND PROSPECTS.*

BY W. HUNTING.

THERE are many reasons why we should endeavour to anticipate the opportunities and difficulties of professional progress. If we succeed in doing so, we are in a position to avoid the one and to make a better use of the other. To the older members who have established their position, the question of our future may not be of such vital importance, but even they must take some interest in the further development of our calling. To the younger members the subject is full of interest, and to the collective body it is of as great importance as to the individual.

From many different parts we already hear complaints of overcrowding, and pessimists tell us that as the entries into the profession annually exceed the departures from it, whilst the profitable demand for veterinarians has almost reached its limits, a time must soon come when overcrowding and all its evil effects will be beyond endurance.

I do not deny for one moment that the present sphere for veterinary practice will very shortly be fully occupied in this country. I know too, that we cannot limit the number of graduates. We may alter the case of graduates, if we cannot control their numbers; and if the alteration be such as to fit them for new places and new labours, I believe there is, and will be for generations to come, room for all, without very serious overcrowding. Overcrowding results not from mere increase of numbers, but from increase of numbers without corresponding increase of opportunities for work and existence.

I hope I am not too optimistic in thinking that the sphere of usefulness for veterinarians is not yet limited by impassable boundaries.

I venture to think that there is still a field for increased numbers of veterinary surgeons, if only we make our men fit for their duties. The special knowledge obtained by a properly-trained veterinary surgeon is as valuable when applied to the prevention, as when directed to the cure, of disease. In many circumstances the preventive is vastly more valuable than the curative skill. Two simple examples will illustrate what I mean. In a large stud of horses the loss from intestinal disease is, we will suppose, great. The *cure* of such cases will not differ very much in number, whether the attempt be made by a first-class or a fifth-class practitioner. The loss will be great under either man. In the *prevention* of such cases is where economy is found, and the fifth-class man is less likely to recognise and remove the cause than the first-class. Very often the veterinarian is not asked to assist in such a matter. The whole hygienic treatment of large studs is entrusted to men whose absolute want of knowledge of the requirements of animals is stupendous—equalled only by the fatuous ignorance of those who entrust them with authority.

Take another example: The sheep on a farm are affected with "rot." What is the saving effected by the treatment of individual cases, whether carried out by one man or another? Cure is of no avail. Prevention is a far wider field, and a much more satisfactory one both for practitioner and client. The training received by a well-educated veterinarian is almost sufficient to fit him for either post—for the cure or the prevention of disease. I say, almost, because up to now, the cure has received a greater proportion of attention than the prevention. We have been taught to apply our special knowledge almost entirely to curing disease, and consequently, much less advance has been made than our opportunities warranted. Of course, I recognise that demand regulates supply, and that veterinarians are not likely to collect and offer knowledge which is costly, until some evidence is forthcoming that

*Discussed at the Meeting of the National Veterinary Association, held at Glasgow on August 3rd.

owners of live stock have any demand for it. But I also recognise that a demand is not likely to be made for an article where it does not exist. Owners of animals will not pay money to veterinarians for advice on questions which the profession has not shown intimate acquaintance with. If we desire to pose as experts upon the prevention of disease, we must show that we really possess the knowledge.

In various parts of the country are veterinarians who devote special attention to the lives of animals from a hygienic point of view, and in every case such men have attained good positions and been accepted as authorities in their districts. In London the services of the trained veterinarian as an adviser or manager of large studs of horses is quite a new departure, but its adoption is spreading, and I venture to say will spread more rapidly as its value is appreciated.

Possibly I may be looking too far ahead for the practical necessities of our profession, but I cannot help saying that I anticipate a time when preventive medicine will have more practitioners than curative; or perhaps I might put it—when practitioners will have as much demand upon their services for prevention as for cure. As education progresses we may safely anticipate that the popular idea of the practice of medicine—*giving something in a bottle*—will be exploded, and that the quack and mystery man will find their occupation gone. Then advice which is intelligible will be valued, and the trusting faith which now exists for a prescription in Latin, or a coloured mixture in a bottle, will only be found, perhaps, in Central Africa.

This change will of course be gradual; but meanwhile it has commenced, and we shall do well to recognise it and fit ourselves for the changes evolution has in store. Only a very little alteration of, and a very little addition to, our training, is necessary to make our graduates equally capable as preventive or curative advisers. Up to a certain mark, the training given to veterinarians is applicable to both branches, and it would well repay the future graduates to expand the work of their latter years of college life, so as to make hygiene and preventive medicine strong subjects.

I propose to examine these two directions in which our progress should be made, a little more in detail, but, before doing so, I should like to thoroughly grasp our present position. It will assist us if we shortly trace the methods by which we reached it. In other words, the short sketch of our profession, from its commencement to the present day, will show us how our development has taken place, and perhaps help us by its lessons to avoid the difficulties and grasp the opportunities of the future.

Until the end of last century, there were no veterinarians in this country. Veterinary science did not exist, and the treatment of animals when sick or lame was undertaken by the owner or his servants, or it was entrusted to men who possessed a little empirical knowledge. The farrier in large towns, and the cow-leech in the country, certainly possessed some little claim to be called experts; the one probably was more skilful than his neighbours in obstetrical manipulations, and the other had a practical acquaintance with the diseases and injuries of the foot, which made his advice of some value. Gervase Markham, who wrote on the diseases of the horse, in 1666, certainly practised and established a great reputation. In 1750, Gibson wrote on farriery, a showed a practical acquaintance with his subject. He was a surgeon, but devoted himself to practice on the horse. Between his time and the year 1800, many men who had studied human medicine and surgery, devoted themselves to the art as applied to horses, but nearly all seem to have limited their practice to London. Clark, of Edinburgh, wrote in 1780 on "The Prevention of Diseases by Exercise, Feeding, and Bleeding." He is styled "Farrier to the King," but was also in business as an owner of horses and mail coaches. Lord Pembroke, Mr. Strickland Freeman, John and

Richard Laurence—who all wrote on horses about the year 1800—were horsemen, and it seems to have then been the fashion for a gentleman professing any special accomplishments as a sportsman or horseman, to include a knowledge of farriery as indispensable. Two subjects—glanders and horse-shoeing—apparently held a very prominent place in the minds of all men connected with horses at the end of last century. Nearly ever writer discusses them, and in fact the literary reputation of most of the early veterinarians rests entirely upon the one or the other. The direct losses from glanders were so ruinous that this disease could not escape notice, and the efforts of owners and farriers seem to have been entirely expended upon attempts to cure it. Shoeing was badly done, and the evils proceeding from it were directly noticeable and easily recognisable as due to errors in the practice. To the losses proceeding from glanders and defective horse-shoeing may be traced the foundation of our first veterinary college. This institution, which was established in London in 1791, had as its first professor a French veterinarian, who had been trained at the Veterinary Schools of Lyons and Alfort. The scheme of study as laid down by him was founded upon that carried out at the Continental Schools, which were supported by Government. It was proposed to teach the anatomy, physiology, and pathology of the domesticated animals. The early death of St. Bel put a stop to this scheme, and his successor confined the teaching of the school to the anatomy, physiology, and pathology of the horse. For nearly fifty years the veterinary teaching of the school was limited to one animal—the horse. Possibly more might have been done if funds had been available, but even the limited education given soon produced good results, and the trained graduates of the College were widely accepted as desirable advisers.

In 1822, one of the graduates from the London Veterinary College (William Dick) founded a school in Edinburgh; and thus the northern part of the kingdom also obtained a supply of trained men to alleviate the sufferings of their horses. What had proved so valuable to the owners of horses, was only slowly recognised as of value to owners of other stock. For years, Mr. Youatt wrote and spoke of the neglect, by the Veterinary College, of the interests of stock owners. The college graduates who had gone into the country to practise their calling found an increasing demand for the application of their scientific knowledge to other animals beside the horse; and, no doubt, many of them did devote themselves to veterinary practice in its larger aspect.

The great impetus, however, to widening the scope of veterinary teaching was given by the Highland and Agricultural Society in Scotland, and by the Royal Agricultural Society in England, when they came forward to assist the veterinary colleges. Then oxen and sheep received consideration, and the teachings of physiology and pathology were directly applied to their ailments. The appointment of Professor Simonds to the chair of Cattle Pathology at the Camden Town School marked a new era in our advance, and prepared a few men to meet a new and serious foe to owners of stock. About the time that cattle pathology was first recognised as a branch of veterinary science, this country was invaded by pleuro-pneumonia and foot-and-mouth disease; also by small-pox in sheep. Many investigations into these were made by Professor Simonds, and his reports may be found in the journals of the Royal Agricultural Society. His work, although none too evident now, has left an indelible mark upon our profession. His students have carried on the work, and to-day the diseases of cattle and sheep are quite as important to veterinarians as are those of the horse.

In more recent years, the pig has been added to the list of animals brought under our hands. Although the individual animal is not often a paying patient, it is becoming more and more common for professional advice to be

sought for in the case of pedigree stock. There are two conditions, however, under which the pig becomes an important addition to our list of animals—(*a*) in connection with contagious diseases which affect not one animal, but the whole herd; (*b*) in connection with the transmission of disease to human beings.

The dog is now a regular veterinary patient. He cannot be called a very new one, for Blaine wrote sixty years ago a book on dog diseases, which, for correct observation and clear description, has not yet been surpassed. Canine pathology is now a well-recognised branch, and a few of our members even make it a speciality, confining their practice entirely to it.

The diseases of birds as a special branch of veterinary practice has not yet been given its proper position. Grouse, pheasants, farm-yard poultry, and cage birds suffer from various diseases which would well repay study. Possibly we cannot expect much remunerative practice from the simple ailments of birds, but the expert who could be relied on to investigate and prevent the spread of the parasitic and contagious diseases of birds, has a fine field before him. To the well-educated veterinarian, only a very little additional knowledge is necessary to master this subject; and he is by his position and opportunities, the man indicated for the work.

This little sketch of our history shows that within the space of a century, we have developed from the empiric through a series of stages. We were first limited in our practice to the horse; then we annexed the ox and sheep; next the dog and pig further extended our practice; and now game, and birds of all kinds, await a further extension.

Until 1866, very little was attempted by veterinarians outside the *cure* of disease. What little advice was given as to prevention, was given gratuitously, and accepted perhaps at its proper value. No attempt at organised prevention had been made, and no one seemed to have recognised the possibility or the importance of preventive medicine as a special branch. Two exceptions only I must make. John Gamgee, of Edinburgh, had for years been crying in the wilderness, and endeavouring to awaken men to a true appreciation of contagious diseases. Budd, of Clifton, in the medical profession, had also grasped the nature of typhoid and the probable methods of spread of it and other diseases, and was the pioneer of preventive medicine. These two men—one in our profession, one in the medical—stood alone. In 1866 came the cattle plague, which rapidly spread throughout the kingdom, and decimated our herds of cattle. It caused much less loss than the two plagues, "pleuro" and "foot and mouth," which had then harassed our farmers for thirty years; but it was more terrible and more striking in that it spread rapidly, developed almost immediately, and was certainly fatal. Suggestions flowed in from all sides. Magistrates, clergymen, and gardeners all offered their advice; but perhaps no class put forward such voluminous and such erroneous theories as the medical men. Our advisers agreed only in one thing, viz., that the great want was a *cure*. Veterinarians can look back on those days with comparative satisfaction. We did not all know the nature of the plague, and the best way to treat it; but, as a profession, we advised slaughter in conjunction with other measures necessary to stamp it out. Our advice was acted on, and it was successful in practice. A Veterinary Department of the State was formed, and thus the profession had its greatest acknowledgment as a body useful to the protection of the nation.

The little department formed to clear the country of cattle plague has developed into a great organisation, and forms the most active division of our present Board of Agriculture.

Since the cattle plague days, quite a number of Acts of Parliament have been made for the proper regulation of the transmissible diseases of animals. Some plagues have been stamped out, some are being exterminated, and some

yet require greater efforts for their extinction. Successful work by this department of the State, instead of lessening its duties and its usefulness, only shows other and wider fields for its powers. Glanders, Tuberculosis, Anthrax, Swine Fever, Strangles, Influenza, Rabies, Black-quarter, Scab, Mange, and other diseases which cause grave losses to owners of stock, await their turn for extermination, and will as surely succumb to organised science as the greater plagues already grappled with.

The contagious and parasitic diseases will supply material for a State Veterinary Department for generations to come, and the expense to the nation will be as nothing to the saving effected by the employment of skilled veterinarians in this work.

A central authority cannot, however, do all the work, nor in these days of self-government is it desirable to trust to a central government for protection against disease. The local authorities now existing all over the kingdom are bodies quite capable of providing some measures of self-protection, especially against disease which has local causes for its origin or transmission. The more perfect the central machine, the greater the necessity for local arrangements to be as perfect as possible. The County Councils and Town Corporations have a heavy responsibility in connection with the health of the human beings and animals under their control. It is a pleasure to acknowledge that they, as a rule, recognise their responsibility, and I believe they only require more knowledge on certain points to induce them to act with greater precision. Every County Council and every Town Corporation has duties to perform under the Contagious Diseases (Animals) Act, which require the assistance of a veterinarian. Such duties are very differently understood at present, and whilst one local authority selects its adviser with care, and devotes considerable attention to the diseases of animals, other authorities evade or neglect their responsibilities and look upon a veterinary adviser as quite a superfluous officer. The reasons for this variation in action are not easy to understand. In some cases it may be due only to want of knowledge in the members of the local body. In some it may be traceable to the want of a really good veterinarian in the district. In all cases it may be remedied by the members of the profession keeping the subject prominently before the inhabitants and using their influence in the election of members, to the local authority. Our profession is much too modest; it forgets that other callings do not understand ours, and it omits the duty of impressing its importance upon those who fail to recognise it.

I said just now that the formation of a State Veterinary Department was the greatest acknowledgment of value ever bestowed on the profession. I forgot the Army Veterinary Department, which had its beginning under the auspices of Professor Coleman at the end of the last century. It is difficult to imagine what would be the state of our army horses without the guidance and attention of veterinarians. We know that, in the older wars, mange and glanders always prevailed, and that the inefficiency of horses from these two causes only was something terrible. We know also that from defective shoeing losses occurred which rendered whole regiments almost inefficient. Fortunately, in those days, what affected our horses also affected those of the enemy, and so less harm resulted. In these modern times every cause of inefficiency must be absent on a campaign, or events may happen which the most lavish expenditure of money or animal life cannot retrieve.

That our Army Veterinary Department is equal to all its requirements is evident from the duration of service, the small percentage of disease, and the cost and condition of the horses entrusted to its care. No special branch of the profession finds room for so many men as the Army Veterinary Department, and no members of our calling are more justly recognised and appreciated by those with whom they come in contact.

Our present position, I think I may safely say, is a very satisfactory one. Veterinary science has only existed in this country one hundred years, and it is now not one whit behind the science of medicine and surgery. In 1844 we were granted a charter of incorporation, and in 1881 we obtained an Act of Parliament which prevented empirics assuming our name or title. We are free from a disadvantage, which obtains in the medical profession, of having a number of degree-granting bodies. There is only one licensing body for veterinary surgeons, and therefore no rivalry in admitting members—a great safe-guard against lowering the standard of efficiency. We have four teaching schools—all independent of the Royal College of Veterinary Surgeons—working with us harmoniously, and stimulated by a healthy spirit of emulation to surpass each other in the quality of student they send to us for examination. The profession contributes a department to the Army, and another to the Civil Service of the State. Local Authorities have appointments which are filled by veterinarians. All the large companies and private firms make use of the profession for the medical and surgical charge of their horses. Agricultural Societies accept our advice; and all matters pertaining to the diseases of stock are left to our decisions. As experts, our opinions are sought for in courts of law; and the science of comparative pathology is acknowledged to be incomplete without the work of veterinarians. The private practitioner now goes everywhere—from the stables of the Queen to the hovel of the poorest subject. The owners of pedigree stock, the racing man, the hunting man, the farmer and breeder, the owners of all domestic pets, are agreed in their recognition of the veterinarian. Our position is certainly satisfactory; but we have to face the fact that there is no rest-and-be-thankful place for us any more than others—that we must keep advancing if we desire to maintain our position.

In what direction are we to advance? The increase of live-stock in this kingdom is not in proportion to the increase of inhabitants, and it is feared that the limit of lucrative employment for veterinarians may soon be reached. What are our prospects? Is it likely that the next half century will present the same field for progress that the past has done? How are we to prevent that overcrowding which engenders unfair competition, and too often permits the success of the least conscientious, whilst the modest and the honourable go to the wall?

These are questions of great importance, and their correct solution will smooth the professional path for the future. The bulk of our profession will always consist of general practitioners, and it is for them we should first provide. Special appointments will be open only to a small proportion, but every such office will take one from the ranks, and by so much lessen pressure.

The Board of Agriculture will always require veterinary advisers and inspectors. Probably the number of places under the Board will not greatly increase. If the total prohibition of the import of live-stock, except for immediate slaughter, be maintained, a less number of port inspectors will be required. Against this cause of decrease we may perhaps assume that, as the Board recognises the necessity of adding to the list of diseases requiring State notice, every additional disease may require increased professional aid to assist in its extinction.

All government departments are limited by the expense, and I am told the Treasury is hard to move even for a good object.

Such conspicuous success has, however, recently attended the work of the Board of Agriculture, that it is difficult to imagine that any Chancellor of the Exchequer will weaken its efficiency by withholding funds. Nothing can be clearer than the national saving which follows the intelligent application of sound preventive regulations to the transmissible diseases of animals. Then

again, it is becoming more generally recognised that human life is endangered by some diseases of animals. Glanders, Tuberculosis, and Rabies are not the only maladies communicable from animals to man, and we may surely look forward to some general and well-organised attempt soon being made to check, if not to stamp out, these dangers. If the central authority undertake this work, they will require more veterinarians in their service, but it is quite possible that any extension of the Contagious Diseases (Animals) Act may throw more of the work on the local authorities.

Local authorities—*i.e.*, County Councils and Corporations--have in very few cases fully availed themselves of the assistance which veterinarians are able to render. Glasgow, I believe, is a brillant exception to the rule, and has fully recognised how the health of its inhabitants and their property in live-stock may be protected by veterinary advice and assistance. Many large towns have given up the contractor and become their own horse owners. Most of them find a direct economy in doing so, but all manage to do their work better, and to show a class of horse which, in form and condition, is a credit to its owners. The corporation stables in the best-managed towns are under the guidance of veterinarians, and it is worthy of notice that where this is the case, the condition of the animals, the duration of service, and the cost of keep, are always more favourable to the ratepayers than under other management. What is economy for one corporation, will be found equally beneficial to others--*verbum sapientis.*

Local authorities are entrusted with the carrying out of the Contagious Diseases (Animals) Act. Only very few of them have distinguished themselves in these matters. The rule has been for a committee to act without any systematic professional guidance, and too often to appoint inspectors with no knowledge of disease. Very often the Acts have been grossly neglected, and the district has had to depend upon the vigilance of the central authority and their bringing pressure to bear upon the local. Such conduct always brings its reward in loss to the district, and the inhabitants have in the long run to suffer for the ignorance and negligence of its local governors. Every local authority should count amongst its officers at least one competent veterinarian whose advice may be always at hand to prevent, if possible, or, when that is too late, to check the spread of disease at the earliest moment, and thus save expense.

Local authorities have to carry out various Acts of Parliament for the protection of the lives and health of the human beings in the district. Flesh and milk are articles of daily consumption--both may be diseased, and both may carry disease. The butcher's shop and the cowshed must be kept clean and healthy, and the animals passing through them should be free from disease. I am aware that the Medical Officers of Health possess powers to ensure this, and I know that they are ready and willing to act. I grant also that to them must always be left the decision of what is, or what is not, fit for human consumption. I have no fault to find with the Medical Officer of Health, and I have no professional jealousy of his position; but I do ask if the public would not be better protected by a conjoint action of the Medical Officer of Health and a veterinarian. Without attempting any invidious comparison, I may claim that no one is so conversant with the appearances of disease, in living or dead animals, as the veterinarian. There are dangerous diseases in which the flesh, when dressed, gives little indication of the danger. There are diseases which in the living animal require an experienced man to diagnose, and there are conditions which the skilled veterinarian recognises as harmless, whilst the less expert enquirer may consider serious. Justice to the seller of milk, the purveyor of meat, and to the owner of stock, requires that he should be protected from error. "Science is exact knowledge," but scientific men are human, and their inexactness may be ruinous to the honest trader.

The interference with trade and the direct pecuniary loss which has more than once been entailed by plausible but erroneous discoveries made by medical men, would be guarded against by the co-operation of a veterinarian in the diagnosis of the conditions presented by animals. Local authorities would act with greater precision in protecting their ratepayers from disease, and with greater fairness to owners of cows, if the veterinarian were asked to assist the Medical Officer of Health. In towns possessing public abattoir, the inspectorship of meat should not be entrusted to untrained men. The detection of disease can only be effected with certainty by men whose training enables them to recognise and understand the nature of the morbid changed they see. Our profession contains men trained for such work, and no other profession or calling can satisfactorily replace us. We must give evidence of our skill, and we must endeavour to convince local authorities of our value. The County Councils, in a few districts, have appointed, in addition to the local veterinary inspectors, a chief inspector, who is able to advise them in all matters relating to diseased animals. It seems to me that every County Council should avail itself of such advice. It is not enough to have inspectors merely as executive officers when disease is detected. Each authority should have an expert adviser to assist them in framing regulations, and in guiding the action necessary to the best interests of the ratepayers.

The Army Veterinary Department affords good appointments for nearly 200 veterinarians, and will probably always require as many as now. In case of war, more would be wanted. The pay and pension of these members of the profession is adequate to the requirements of the service. The young man who seeks to enter our profession does not need a large capital, but he requires a good education, and in future that education will be better, consequently more costly. It has recently been attempted to prove that the game was not worth the candle, and that the remuneration obtainable after taking our diploma was disproportionately small compared with the cost of education. This certainly cannot be said of the Army Veterinary Department, nor do I believe it is true of the average practitioner.

The Indian Civil Veterinary Department is another source of special appointments, and although the way to them is through the army, we must remember that every officer absorbed by it makes room for another man in the Army Veterinary Department. Probably this Indian Department will be largely extended, and increased numbers of trained veterinarians will then be wanted.

When all these special posts are filled up, we have still the great body of general practitioners to provide for. The special posts possess an indirect advantage which must not be lost sight of, in addition to the direct one of finding employment for an individual: they show the importance to the Government, and to the country, of a supply of trained veterinarians. They thus react favourably upon the general practitioner by impressing the value of our calling upon many minds.

To return to the general practitioner and his prospects, we must remember that we are now, by the Act of 1881, very considerably protected against the unqualified practitioner. The registered practitioners, who had no expensive college training, must of necessity become less and less every year; and their places will be taken by our trained graduates. When we compare the numbers entering the profession with those leaving it, we must add to the latter list the names of all retiring registered men, and I believe that when this is done the increased number of practitioners will be much smaller than has been calculated. Still, I am not prepared to deny that our numbers are absolutely increasing, and that the number of diseased and sick animals is not increasing in proportion. I think, however, that we are much more widely consulted than in the past days; that cases are sent to us now which were

not sent to veterinarians a few years ago; that some animals, such as pigs, dogs, and cats, are now attended for disease or lameness, which in the last generation would simply have been killed at once. I believe that the owners of animals in the future will still more often see their profit in frequently paying for veterinary advice. In short, I hold that the present rate of increase in the numbers of our graduates will be met for many years by the increased demand for our services by the owners of sick or injured animals. Although serious disease may decrease every year as the result of preventive measures enforced by law, and as the result of better hygienic and sanitary arrangements, I believe stock owners will recognise that loss is entailed by delay, and that the cheapest method of management is that which includes veterinary attendance on the slighter cases, or it may be on the early stages of graver ones.

There, is, however, an almost untrodden field for men with sound veterinary training. We teach our students physiology to enable them to understand pathology. The science of animal life should have a wider bearing, and those who understand it should be just as certain guides in the management of animals in health as in the treatment of animals in disease. To make our graduates fit for both offices only requires a more direct and practical application of their teaching to animals in health. We must supplement physiology by hygiene, and take care that veterinarians are practically acquainted with the habits and requirements of healthy animals. Add to veterinary knowledge hygiene, and we at once turn out a man against whom no untrained competitor has a chance. This logically follows, and where practical examples can be found the argument is illustrated.

In various parts of the country we can point to veterinarians at the head of the horse departments of large firms and public companies. In every case their management has shown results never attained by the purely empirical man. In Durham, Northumberland, Warwickshire, Lancashire, and London, are well-known instances. Sometimes we find the owner of large studs is a trained veterinarian, although not practising. Such men are generally prominently successful. In London, I may be permitted to name such firms as Wimbush and Co., Earl and Co., and Withers and Co.—the three largest and most eminent job masters. Our register discloses these names in its list, and I venture to assert that their success in management is not slightly due to their training.

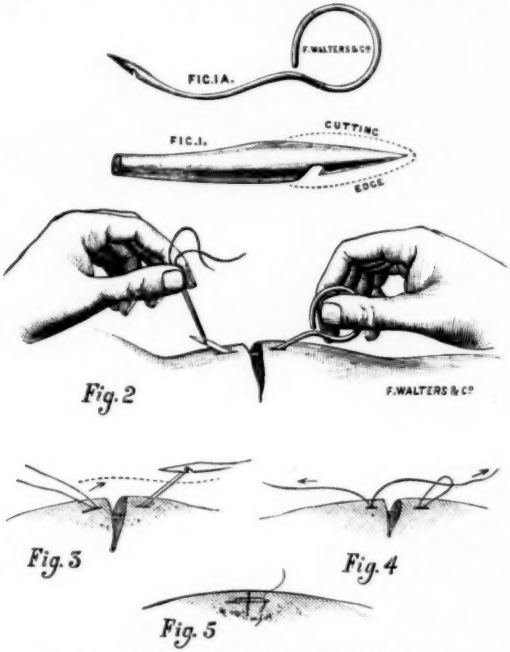
Let us follow the indication. Let all our graduates be given a training which will enable them to treat healthy and sick animals, and we shall then supply a man for whom the demand is great. The proposed four years scheme just adopted by our Council, is the key to the problem of the future. The increased and improved education will afford its possessors a wider field for remunerative employment, and the public will have cause to thank us for a more useful member. The bugbear of overcrowding can be conquered by turning out a man better equipped to meet the demands of the world; and we can raise our professional and social status by demonstrating our fitness for the positions we demand. To the question "What are our prospects?" I reply—they are good and sufficient. We have only to qualify, and we shall reap a fair reward.

THE FELLOWSHIP DEGREE.

An examination for the Fellowship degree took place on July 29th, the examiners being Professor Duguid, Mr. Roalfe Cox, and Dr. Fleming, C.B. The following members having undergone the necessary written and oral tests were deemed eligible for the degree:—James Blakeway, Birmingham; W. H. and J. Crowhurst, Canterbury; J. J. Crowhurst, Stratford-on-Avon; F. H. Gibbings, Nottingham; E. G. Crowhurst, Leamington.

NEW SUTURE NEEDLE AND HOLDER COMBINED.

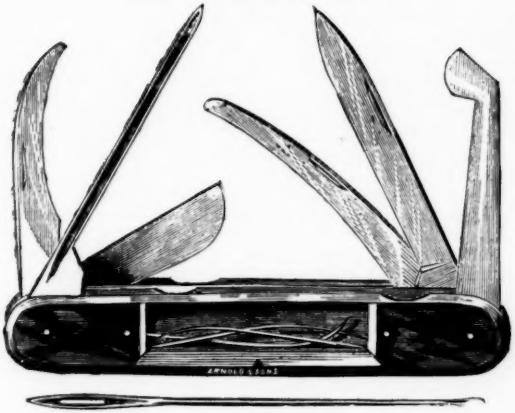
MESSRS. WALTERS AND CO., Instrument Makers, 29, Moorgate Street, have devised a suture needle which has the great advantage of being combined with a handle—the two, in fact, are in one piece—that must prove most convenient to veterinary surgeons when dealing with the wounds of thick-skinned animals, owing to its solidity, the ease with which it it can be manipulated, and no threading being required. Another advantage claimed for it is, that the puncture it makes heals in less time than that made by the ordinary



FIGS. 1 and 1A show the Needle and construction of the point.
FIG. 2 illustrates the way the Needle should be held, and the manner of holding the Suture.
FIGS. 3 and 4. Manner of drawing the double thread through both sides of the gap, and passing one end of it through the loop, thus bringing the two edges together.
FIG. 5 shows the Wound closed and the two ends of the Suture tied.

needle, which is pressed through the integument, whereas this cuts its way like a lancet, and the wounds therefore heal more quickly. The healing process is also expedited owing to the fingers not being required to touch the wounds, thus making the latter asceptic. The needle is in four sizes, all of which are hand-made and very carefully finished; these sizes are all suitable for veterinary practice, but an extra small one, suitable for the finest operations, is also made.

THE COMPACTUM KNIFE.



THE above sketch shows a very useful knife, brought out by Messrs. Arnold and Sons, London, which almost does away with carrying a pocket case. It consists of a horn handle in which are set six instruments, viz.: castrating knife, probe-pointed bistoury, scalpel, gum lancet, exploring needle, and Syme's abscess knife. Besides these, there is a groove cut under the surface of the horn, which holds a silver probe; there is also a small receptacle at the side for needles.

This is certainly the most compact knife which has, as yet, been brought before the profession; though it contains such a number of instruments, it is very little larger than an ordinary knife.

FITZWYGRAM PRIZE COMPETITION.

NINE candidates competed for these prizes. The theoretical examination was held in London and Edinburgh on the 8th June; the practical and *viva voce* was held at the Royal Horse Infirmary, Woolwich, on the 22nd June. The following is the result:—

T. G. Heatley, First Prize, £50. (Dick Veterinary College, Edinburgh.)
W. F. Maynard, Second Prize, £30. (Royal Veterinary College, London.)
F. L. Clunes, Third Prize, £20. " " "

The examiners were Veterinary-Captain F. Raymond and Professor W. A. Edgar.

ARTHUR W. HILL, *Hon. Sec.*

VETERINARY HONOURS AND REWARDS.

BY a Presidential decree of July 14th, on the recommendation of the French Minister of Agriculture, Professor Nocard, of the Alfort Veterinary School, and Member of the French Academy of Medicine, has been promoted to the grade of "Officier" of the Legion of Honour, that of "Chevalier" having been conferred upon him on January 11th, 1884.

At a *séance* of the Belgian Academy of Medicine, held on July 30th, Dr. Fleming, C.B., was unanimously elected an Honorary Foreign Member, he having had the title of Foreign Correspondent conferred upon him some years ago by that learned body. The Perpetual Secretary, in making this announcement to the recipient, adds :—"In conferring this new distinction, the Academy is desirous of showing the high value it attaches to your remarkable works, and to testify to the esteem it professes for you personally. You will presently receive the diploma and a copy of the royal decree, sanctioning the decision of the Academy. I am happy, my very honoured colleague, in being on this occasion the interpreter of the sentiments of the Academy, and I beg of you to accept my personal felicitations."

On the recommendation of Professor Chauveau, the National Agricultural Society of France has awarded a gold medal to M. Lucet, Veterinary Surgeon at Courtenay, for his memoir on the Mammites of the cow; and on the recommendation of Professor Trasbot, another gold medal to Professor Mauri, of the Toulouse Veterinary School, for his observations on the Castration of Cryptorchid Horses. This distinguished Society has also elected Professor Neumann, of the Toulouse Veterinary School, a Corresponding Member in the section of Animal Economy. The French Society for the Encouragement of Animal Industry, on the report of M. Muntz, has accorded Professor Cornevin, of the Lyons Veterinary School, the sum of 4,000 francs (£160), for his experiments in the feeding of cattle.

On the occasion of last Queen's birthday, the Viceroy of India was pleased to confer the title of Khan Bahadur on Saiyid Amir Shah, Assistant-Surgeon and Lecturer on Chemistry at the Lahore Veterinary College.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Quarterly Meeting of Council Held July 21st, 1892.

Mr. W. J. Mulvey, President, in the Chair.

Present:—General Sir Frederick Fitzwygram; Professors Penberthy and Walley, Veterinary-Colonel Lambert, Veterinary Lieutenant-Colonel Oliphant, Veterinary-Captain Raymond; Messrs. Beddard, Burnett, Donald, Fraser, Hartley, Hunting, Kidd, Mason, Merrick, Nisbet, Simpson, Trigger, and Wragg, Mr. G. Thatcher (Solicitor), and Mr. A. W. Hill (Secretary).

The Secretary stated that he had received letters from Messrs. Hedley, Taylor, and Whittle, regretting their inability to attend the meeting.

Presentation to the Library.

The Secretary announced the following presentation :—"Military Horses and their Management," by Veterinary-Colonel Thomson, A.V.D.

On the motion of Mr. Wragg, seconded by Mr. Mason, a vote of thanks was unanimously accorded to Veterinary-Colonel Thomson for his presentation to the library.

Correspondence.

The Secretary read a letter from Sir Henry Simpson asking the Council to accept the volumes of the "Transactions of the Congress of Hygiene and Demography," which were to be published at intervals during the next thirteen months.

On the motion of Mr. MASON, seconded by Mr. WRAGG, it was resolved that Sir Henry Simpson's kind offer be accepted.

The SECRETARY read the following letter from Mr. Rogers:

"170, BROMPTON ROAD, S.W.:
July 18*th*, 1892.

"To the President and Council of the Royal College of Veterinary Surgeons.

"GENTLEMEN,—I wish to bring to your notice, and at the same time to protest against the method of conducting the recent examination of shoeing-smiths held at the office of the Worshipful Company of Farriers. It is scarcely necessary to point out that, in dealing with a handicraft like that of the shoeing-smiths, it is essential that each candidate's work be seen by competent judges before he is passed as efficient in his calling. This method has been carried out by Agricultural Societies, who have provided the indispensable plant, and have awarded prizes on the actual handiwork of the candidates. The recent London examination of the Worshipful Company of Farriers was *vivâ voce*, and conducted in a room at the Company's office, 9, Laurence Pountney Hill, E.C., after 6 o'clock in the evening. Candidates were passed after a few minutes' questioning on elementary details of the trade, and without having handled a tool or seen a horse. To a man so passed a certificate was presented (on payment of a fee), stating that he was 'duly qualified to work as a registered shoeing-smith.' It is evident that such an examination may be passed by any man who, although possessing a smattering of theoretical horse-shoeing, is incapable of making or putting on a shoe. The Council is directly represented on the Registration Committee of the Worshipful Company of Farriers' scheme, and is therefore largely responsible for the framing and carrying out of the examination. I have ventured to bring the matter to your notice, hoping that you will use your best endeavours to institute a satisfactory method of testing a shoeing-smith, namely, a genuine practical examination on similar lines to those pursued by Agricultural Societies, and by the Plumbers' Company, whose lines this scheme was supposed to follow.

"I am, Gentlemen,
"Yours faithfully,
"H. G. ROGERS."

The PRESIDENT said that Mr. Rogers's letter was a very serious accusation against the way in which the examinations were conducted by the Farriers' Company. It was for the Council to consider what answer should be sent to Mr. Rogers, and whether any inquiry should be made as to the responsibility of the College with regard to the method of examining candidates for registration. Perhaps Mr. Wragg, one of the representatives of the College on that committee, would give some explanation.

Mr. WRAGG said that, as far as his memory served him, the candidates had to bring with them a certificate from the employer under whom they had served for two years previous to presenting themselves for examination. He thought that was an answer that a man was an efficient horse-shoer before presenting himself.

Mr. SIMPSON asked whether the College had anything to do with the matter? The Council sent a certain number of men to assist the Farriers' Company, and the examiners were responsible rather to the Society of Farriers than to the College.

The PRESIDENT said that the examiners were to a certain extent responsible to the College, as they were members of the veterinary profession appointed by this College as their representatives. If their representatives considered that the Farriers' Company was not carrying on the examination in a proper

way they should report to the Council, and ask for further instructions as to whether they should continue to act.

Mr. SIMPSON asked whether there was any report complaining of the method in which the examinations were conducted.

The PRESIDENT said that there was not.

Mr. SIMPSON said he thought it was a matter for the Society of Farriers, and not for the Council. If their representative considered that the matters was not being properly dealt with, their duty would be simply to resign their positions, and let the Farriers' Company reorganise the examinations. At present, however, he thought the Council should take no notice of a communication in the form of a protest from one individual.

Veterinary-Colonel LAMBERT said he had seen some correspondence in the *Sportsman* with regard to the matter, evidently written with tremendous animus. He thought such correspondence injudicious, so far as the profession was concerned.

Mr. TRIGGER asked on what authority the letter had been written? Was it hearsay, or was Mr. Rogers actually present at the examination?

The PRESIDENT said that Mr. Rogers presented himself as a master farrier for examination, and received a certificate. He also stated that he believed he was never asked whether he worked as a farrier, and as a matter of fact he did not.

Veterinary-Colonel LAMBERT said that if Mr. Rogers presented himself as a master farrier, and said he was a veterinary surgeon with a large shoeing forge, he would be supposed to know something about it. Although the examiners in that case might have been surprised, they would think themselves forced to give him a certificate. It would be presumed by the fact of a man coming forward that he knew how to shoe horses.

Mr. SIMPSON moved—"That Mr. Rogers's letter be forwarded to the Worshipful Company of Farriers without any comment by the Council."

Mr. TRIGGER seconded the motion, which was agreed to.

The SECRETARY read a letter from Mr. John Armstrong, Hon. Secretary of the Border Counties Veterinary Medical Society, stating that the two following resolutions had been unanimously agreed to at the last general meeting of that Society:—1. "That a higher class of matriculation examination be imposed, the highest value to be placed on English." 2. "That the subject of a four years' scheme, so far as examinations are concerned, has not been shown to be an urgent one, but that this Society would like to see a written examination added to each table in the professional examination—first, second, and final."

Finance Committee.

The SECRETARY read the report of the Finance Committee.

Mr. WRAGG moved—"That the report of the Finance Committee be adopted, and that the Council authorise the Treasurer to draw cheques to meet the liabilities."

Veterinary-Captain RAYMOND seconded the motion, which was agreed to.

Registration Committee.

The SECRETARY read the report of the Registration Committee, which stated that the Committee had considered the case of Mr. R. Beart, on a charge of professional misconduct under section 6. The person complained of, attended, and stated that he was not Mr. R. Beart, but Mr. George Beart, an unqualified person, practising in the name of Mr. R. Beart. The Committee recommended that he be prosecuted under section 17, and that the case of Mr. R. Beart be proceeded with on the charge of covering an unqualified person. Various other prosecutions were also recommended, as well as a list of cases pending to be printed for the information of the committee, and sent out with notices.

Professor WALLEY moved, and Mr. J. F. SIMPSON seconded, the adoption of the report, which was agreed to.

Mr. TRIGGER moved that the Solicitor be authorised to prosecute the persons mentioned in the report, and that the seal of the College be affixed to the prosecutions.

Mr. MASON seconded the motion, which was agreed to.

General Purposes Committee.

The SECRETARY read the report, which recommended that the Council should advertise for tenders for painting the inside of the College building.

The PRESIDENT thought the better plan would be to select five or six firms, and ask them to send in tenders.

Mr. TRIGGER said he understood that to be the decision at which the Committee had come to.

Veterinary-Colonel LAMBERT asked the Treasurer whether the funds of the College would permit of the outlay.

Mr. WRAGG said he doubted whether the expense could be afforded until after Christmas.

Mr. FRASER moved the adoption of the report.

Veterinary-Captain RAYMOND seconded the motion, which was agreed to.

On the motion of Mr. JAMES F. SIMPSON, seconded by Mr. NISBET, it was resolved that the work be not done for six months.

Committee re *Methylated Spirit.*

The SECRETARY read the report as follows:—"The Solicitor reported that he had communicated to the Board of Inland Revenue the resolution passed at the last meeting, and that he had received a reply to the effect that, after full and careful consideration, the Board of Inland Revenue were not prepared to accede to the proposal that members of the Royal College of Veterinary Surgeons should be granted the general power to use methylated spirit with the addition of a quantity of aloes. Captain Raymond proposed, and Mr. J. F. Simpson seconded—'That the Secretary be instructed to communicate with the Pharmaceutical Society and the Society of Chemists, to ask if any addition can be added to methylated spirit which shall enable veterinary surgeons to use such spirit without restrictions in the treatment of domesticated animals.' This was carried *nem. con.*"

Professor WALLEY said he had communicated with the Inland Revenue Office in Edinburgh on the subject, and had been informed that the only two things which could be used were chloroform and ether.

On the motion of Veterinary-Captain RAYMOND, seconded by Mr. J. F. SIMPSON, the report was adopted.

Court of Examiners.

The SECRETARY read the report, which stated that at a meeting of the examiners held in London on and between May 16th and 20th, 1892, the results were as follows:—In Class C, 29 passed and 22 were rejected; in Class B, 34 passed and 8 were rejected; in Class A, 44 passed and 21 were rejected. At the meeting in Glasgow the results were—In Class C, 12 passed and 9 were rejected; in Class B, 15 passed and 12 were rejected. In Edinburgh (Dick College), Class C, 18 passed and 18 were rejected; Class B, 33 passed and 12 were rejected; Class A, 35 passed and 17 were rejected; (New College) Class C, 11 passed and 9 were rejected; Class B, 22 passed and 10 were rejected; Class A, 13 passed and 13 were rejected.

The SECRETARY read the following, signed by the Chairman of the Court of Examiners at the practical examination:—

To the President and Council of the Royal College of Veterinary Surgeons.

We, the practical section of your Board of Examiners, Class C, have to report that at the recent examinations held in the month of May in London, Glasgow, and Edinburgh, those examinations were conducted in accordance with the recent minutes of the Council; every student being examined for half an hour conjointly by two examiners on each subject, in addition to which operations on dead subjects, examination as to soundness, and the writing of certificates were undertaken by each student at his own time.

Taking students generally, we would say there is a want of system in their method of examining horses for soundness, and in many cases a lack of that manipulative tact which marks a horseman and impresses a client favourably or otherwise.

The inability to detect even the lame leg of a horse is very marked, showing the want of a practical education of the eye in such matters. In one very particular case, three students watching a distinctly lame horse run, gave each a different leg as the lame one. One branch of the examination of horses for soundness is necessarily omitted, viz., galloping for testing the respiration.

The writing of certificates, also, after the examination for soundness, is in many cases more than indifferent. Marks of identity, &c., are not properly put, and the educational test passed by some of the students must have been mild indeed. Attached are four certificates handed in at the recent examinations.

As a rule, we would say that students failing to pass the practical section of their examination do so not so frequently from want of technical or scientific knowledge, but for displaying ignorance of the smaller details of everyday practice such as most horse or stock-men would be conversant with.

In the conduct of the examinations, we have to thank the principals and others of the various schools for the consideration and assistance which they in every case gave us.

In London we had fresh cattle provided on one day only, and to examine students on animals always inside the College walls, the cattle being in all probability perfectly well known to every student, necessarily restricted the scope and character of the examination which we consider ought to be carried out in Class C practical.

In Edinburgh the same difficulty existed, the three cows provided on the first day having to do duty for the succeeding ones. In this case, we understood the restrictions on the movement of cattle in that city accounted for the want of supply of fresh animals each day.

In Edinburgh, also, many of the legs supplied were in such an advanced state of decomposition as to be of but little use.

Signed on behalf of the Board,

HARRY OLVER,
Chairman.

Tamworth; *June 30th*, 1892.

"This is to certify that I have this day at the request of the Board of Examiners examined a Pieball horse six years. he is in my opinion, unsound having two splints on the inside near fore leg spavin and a thorough pin and splint on near hind. two splints on inside of off fore. Thorough pin and bone spavin off hind. Bad hind feet and colar gall on off shoulder."

"I certify that I have this day exam. for Col. Duck, A.V.D., white Bony Mare 5 years old 4 white feet. Find that she has a splint off fore Curb, spavined near hind spavin off, and therefore in my opinion unsound."

"I hereby certify that I have this day Examined a Bay Gelding, white scratch on face, 15-3 hands high, 7 years old.

"Said gelding has got (shoulder slip) actrophy of mussels of near shoulder, and a small splint inside of near fore leg.

"Bone spavin and Bog spavin near Hock.

"Also Splint outside of off fore leg, and Bog spavin off Hock.

"Thurished in all four feet. Thicking of all four Fetlocks and marks of Brushing on hind Fetloks.

"Also marks of collargalls. And in my opinion he is unsound."

"This is to certify that I this day examined a dapelid Gray mare in the possession of Professor McCall. I find said animal aged also got both fore knees bumped & stiff & thereby unsound, also thickened fetlocks I also find fractured haunch on off side & thereby unsound & week spine over the lumber region I also find bone spavin on off hock & also unsound, and also calised Fetlocks & Thrush on both hind & Splint on off hind."

"I hereby certify that I have examined this day at request of Board of Examiners a grey gelding nine yrs old with near fore & off hind fetlocks white Said gelding I find to have bog spavine & bone spavine on near hock & sand crack on off hind, in my opinion the animal is unsound.

"P.S.—Also find the following defects. Sprained tendons near fore, near hind buffing small sand crack. On off fore small splint (inside) incipient side bone inside & shod with leather sole.

"On off hind bone spavine & slight bog spavine & sand crack.

"Lame on near hind with wasting of gleuteal muscles and skin abraisons caused by colar."

Veterinary-Captain RAYMOND asked why the cattle were not changed at the London examination?

The SECRETARY said it was because they could not be got. They sent up each day, but could not be supplied. It was not from want of attention on their part, but on the part of the persons who had promised the supplies.

Veterinary-Captain RAYMOND asked why the legs were in a rotten state at the Edinburgh examination? He thought it was a very serious thing.

Professor WALLEY said the greatest difficulty was experienced in getting legs, and they had to be collected some little time before the examination.

Veterinary-Captain RAYMOND suggested that a contract should be entered into between the College and Harrison, Barber and Co. to undertake the supply of a certain number of legs in Scotland as in London, in a sound condition.

Veterinary-Colonel LAMBERT asked whether it was not possible to take the students who were to be examined to the Cattle Market instead of two or three animals being brought to the College. It struck him as being rather a farce, especially as the animals were used over and over again. The report of the Examiners for the Practical Examination was the most serious thing they had heard for some years. He hoped the College would take some steps to ensure that the examination was carried out in a proper manner. It was most unjust to the Examiners to have to write their names to diplomas when they had not had the proper means for testing the men.

General SIR FREDERICK FITZWYGRAM said steps might have been taken for the students to go up to the Cattle Market, had there been any desire to do so. To have three cows coming up at Glasgow or Edinburgh day after day, was making a farce of the whole thing.

Professor WALLEY said he thought the Examiners in making those accusations should, in all justness and fairness, have stated from which College the students came whom they found so deficient in all practical matters. It was not fair to lump together all the Colleges, and say that all the men, or a great number of them, were incapable of carrying out the slightest possible manipulation. He would ask the Secretary to direct that in future reports of that

kind it must be distinctly stated to what College the men belonged against whom the complaints were made. All he could say was, that if any of his men, taking them all round, made such mistakes as had been stated they ought to be ashamed of themselves. Hitherto the examination in Edinburgh in the horse department had been held at Scott and Co.'s, and the cattle examination at the abattoir. This year, however, Scott and Co. had made so much fuss about it that fresh horses were obtained every day from the Tramway Company. Great difficulties had been experienced in moving the cattle, on account of the foot and mouth disease and pleuro-pneumonia restrictions, which were very great. As the horse examination had to be held at the College, it was felt that the cattle examination should be held there too, in order to save time. He did not agree with the statement that the whole thing was a farce. It was impossible to obtain a sufficient number of sick cattle to institute a proper clinical examination. The only thing the Examiners could do was to find out whether the students could manipulate the cattle in a proper manner, and point out where disease was likely to be, and how it could be arrested. It came to the same thing, whether there was one animal or forty. They had done all they possibly could in the matter, but they had been hampered on every side.

Professor PENBERTHY thought some special arrangement should be entered into for getting fresh materials for the students to be examined upon, and that the College should as far as possible do the whole of it. There ought to be no chance of the students seeing the animals beforehand. He thought a small committee of the Council might be formed to select the animals, and in some way regulate the supply for the examination.

Professor WALLEY said that, personally, he should be very glad for that to be done.

Mr. J. F. SIMPSON said he agreed with Professor Penberthy's remarks. They ought not to look to the schools to supply the materials for the examination. It was not only unfair, but it was putting them in a position in which they ought not to be placed, and it was ungracious to find fault with the subjects which had been provided. If the College insisted upon perfection it must pay for it, and if they were unable to make a profit out of the examinations of the students they must raise the fees. Until they took the whole matter into their own hands he did not think they had any right to find fault with the schools.

Veterinary-Captain RAYMOND moved that the report be received and adopted.

Professor PENBERTHY seconded the motion, which was agreed to.

Conference of Principals of Schools, Examiners, and Members of Council.

The SECRETARY read the report, which stated that at a conference held on the 20th of July, the four years' scheme of professional education was submitted and discussed, and altered and finally approved in the form annexed marked I. The syllabus of the subjects of examination was also submitted, discussed, altered, and finally approved in the form annexed marked II.

FOUR YEARS' SCHEME OF PROFESSIONAL EDUCATION.

NOTE.—*All Subjects* to be tested by a Written Examination (where not otherwise specified) and an Oral Examination in the presence of living or other specimens.

Written papers to consist of six questions, but only four to be attempted, excepting in Class D, when eight questions shall be set and six answered.

EXAMINATION A:

Written, 2 hours Oral, 15 minutes	1. Anatomy of Domesticated Animals:—Bones, Ligaments, Joints.
Ditto	2. Chemistry and Elementary Physics.
Ditto	3. Biology:—Elementary Zoology and Botany.

EXAMINATION B:

Written, 2 hours Oral, 20 minutes	1. Anatomy of Domesticated Animals.
Ditto	2. Histology and Physiology.
Practical only, 30 minutes	3. Stable Management and Manipulation of Domesticated Animals. Principles of Shoeing.

EXAMINATION C:

Written, 2 hours Oral, 15 minutes	1. Morbid Anatomy, Pathology, and Bacteriology.
Ditto	2. Materia Medica, Pharmacy, Therapeutics, and Toxicology.
Conjointly— Written, 2 hours Oral, 15 minutes	3. Veterinary Hygiene and Dietetics.

EXAMINATION D:

Written, 3 hours Oral, 1 hour	1. Principles and Practice of Veterinary Medicine and Surgery. Clinical Medicine, Surgery, and Obstetrics (Horse).
Written, 3 hours Oral, 1 hour	2. Principles and Practice of Veterinary Medicine and Surgery. Clinical Medicine, Surgery, and Obstetrics (other Domesticated Animals). Meat Inspection.

No Student at College, when this Scheme is sanctioned by the Council, to be in any way affected by it, and an interval of three years to be allowed between the passing of the Scheme and its coming into force.

EXAMINATION "A."

ANATOMY OF DOMESTICATED ANIMALS.

Synopsis of Subjects.

Bones.
Ligaments.
Joints.

CHEMISTRY AND ELEMENTARY PHYSICS.

Referred to Examiners in Chemistry.

BIOLOGY, ELEMENTARY ZOOLOGY, AND BOTANY.

Synopsis of Subjects.

BIOLOGY.

ZOOLOGY.

1. Notions of General Classification—Sub-kingdoms, classes, orders, species, races.
2. *Invertebrates*—Characteristics, classes.
3. Protozoa—Amœbæ, Gregarines.
4. Echinoderms—Characteristics.
5. Worms—Flukes, tapeworms, &c.
6. Mollusca—Characteristics.
7. Insecta—Characteristics, metamorphosis. Examples of useful and deleterious insects.

8. *Vertebrates*—Organisation, skeleton, &c.
9. Amphibia—Characteristics, metamorphosis.
10. Fishes—Characteristics.
11. Reptiles—Characteristics.
12. Birds—Characteristics.
13. Mammals—Characteristics. Elementary notions of orders.

BOTANY.

Plants.

1. Vegetable Kingdom—Difference with Animal Kingdom.
2. Elementary ideas about the Organs and their Functions.
3. Flowering and Non-flowering Plants.
4. Organs of Nutrition—Roots, stem, leaves—Organs of Reproduction—The Flower (calyx, corolla) andrœcium and gynœcium—Examples chosen from common or useful plants—The fruit, seed, germination.
5. Non-flowering Plants—Elementary ideas about Sedges, Algæ, and Fungi.
6. Classification (Principles) of Plants—Natural orders, sub-orders, classes, species, &c.
7. Characters of the following natural orders, and ideas about the veterinary plants therein.

Dicotyledons.

Cruciferæ — Rosaceæ — Leguminosæ — Compositæ— Solanaceæ — Umbelliferæ—Coniferæ—Ranunculaceæ—Scrophulaceæ—Papaveraceæ.

Monocotyledons.

Liliaceæ—Graminiferæ—Cyperaceæ.

EXAMINATION "B."

ANATOMY OF DOMESTICATED ANIMALS.

Synopsis of Subjects.

Horse—Ox—Sheep—Pig—Dog.

HISTOLOGY AND PHYSIOLOGY.

Synopsis of Subjects.

HISTOLOGY.

The recognition and description of animal tissues and fluids.
Blood—Lymph.
Epithelial tissue.
Connective tissue.
Muscular tissue.
Nervous tissue.
The arrangement of tissues in special organs or the microscopical structure of parts.
Simple histological methods.

PHYSIOLOGY.

Structural and physical properties of organisms.
Chemical composition of the animal body.
Vital characters of the animal body.
The blood—Food.
Digestion.
Absorption.
Circulation.
Respiration.
Secretion.
Excretion.

Nutrition.
Animal heat.
Muscular action.
Locomotion.
The nervous system.
The special senses.
Reproduction, including lactation.
Development.

Candidates are expected to be familiar with the Characteristic Chemical Reactions of Albumen, Sugar, and with the Elementary Chemical Examination of Milk, Bile, and Urine.

STABLE MANAGEMENT AND MANIPULATION OF DOMESTICATED ANIMALS. PRINCIPLES OF SHOEING.

Synopsis of Subjects.

Approaching animals.
Securing animals in stables.
Handling animals.
Handling special parts—Head, foot, tail, &c.
Use of twitches, muzzles, rings.
Grooming—Tools and implements.
Clothing—Bandaging.
Clipping—Singeing.
Halters—Pillar-reins.
Adjusting saddles, bridles, collars, &c.
Principles of shoeing.

EXAMINATION "C."

MORBID ANATOMY, PATHOLOGY, AND BACTERIOLOGY.

Synopsis of Subjects.

Morbid cellular changes.
Plethora—Anæmia.
Hypertrophy—Atrophy.
Hyperæmia.
Œdema—Dropsy.
Hæmorrhage.
Inflammation—General phenomena—Changes in blood, changes in tissues—Exudation—Products of inflammation—Varieties of inflammation—Methods of repair—Effects on special tissues—Effects on special organs.
Necrosis—Gangrene.
Thrombosis—Embolism.
Degenerations—Albuminous—Fatty—Colloid—Mucous—Calcareous—Pigmentary—Gelatinous—Fibroid.
Morbid changes in blood—Qualitative—In relation to pressures.
Tumours.
Cysts.
Fever.
Septicæmia.
Pyæmia.
Specific infections—Their cause, local changes, general effects.
Elementary bacteriology as applied to diseases of domestic animals.

Materia Medica, Pharmacy, Therapeutics, and Toxicology.

Synopsis of Subjects.

Forms in which Medicines are used.
Methods of administration or application.
Actions and uses of Medicines.
Classification of Medicines.
Special agents—their actions, doses, derivation, preparation, &c.
Incompatibles.
Impurities.
Writing and reading prescriptions.
Poisons—mineral, vegetable, animal.
Symptoms of poisoning.
Antidotes—chemical and physiological.
Tests.

Veterinary Hygiene and Dietetics.

Synopsis of Subjects.

Water—Quality, quantity.
Air—Quality, quantity.
Food—Grasses, cereals, roots, &c.
Stables, Cowsheds, Kennels, Pigsties, Sheep-pens — Construction, aspect. Ventilation, drainage. Fittings.
Feeding—General principles, quantities, varieties of foods, preparation and mixing food.
Grooming horses.
Milking cows.
Washing—Sheep, dogs.
"Dipping."
General principles of breeding.
Care of animals during gestation.
The Oral Section to include:—
Recognition of defects in stables.
" " harness.
" " forage.
A general acquaintance with animal conformation, especially as regards the horse; his points, marks, height, breed, colour, age, adaptability for work.

EXAMINATION "D."

Principles and Practice of Veterinary Medicine.

(Exclusive of Morbid Anatomy and Pathology.)

Synopsis of Subjects.

The causes of disease.
Symptoms of disease.
General treatment of disease.
Nomenclature of disease.
Classification of disease.
Fevers—Their history, causes, symptoms, treatment.
Epizootic diseases—Their cause, history, distribution, methods of spread, incubation, symptoms, treatment, and *post-mortem* appearances.
Specific diseases.

Blood diseases.
Diseases of the cerebro-spinal system.
" respiratory organs.
" digestive organs.
" circulatory organs.
" urinary organs.
" generative organs.
" cutaneous system.

PRINCIPLES AND PRACTICE OF VETERINARY SURGERY.

(Exclusive of Morbid Anatomy and Pathology.)

Synopsis of Subjects.

Pathological conditions :
Inflammation.
Suppuration.
Abscess.
Ulceration.
Gangrene.
Injuries :
Wounds—incised, punctured, lacerated, fistulous.
Contusions.
Burns and scalds.
Hæmorrhage.
Sprain.
Tumours.
Injuries and diseases of—
Bones, joints, muscles and tendons, arteries, veins, nerves, bursæ, lymphatics, skin.
Injuries and diseases of regions :
Skull, face, ear, eye, tongue, teeth, pharynx, larynx, œsophagus, trachea, neck, withers, back, tail, chest, abdomen, pelvis, limbs, genital organs, internal organs.
Examination for soundness.
Operations.
Obstetrics.
Meat inspection.

On the motion of Veterinary-Captain RAYMOND, seconded by Professor WALLEY, the report was received and adopted.

Farriers' Company Registration Committee.

On a ballot being taken, Dr. Fleming, Mr. F. W. Wragg, and Mr. W. Hunting were elected to serve on the General Registration Committee of the Worshipful Company of Farriers in connection with the Registration of Shoeing Smiths.

Motion by Mr. Kidd.

Mr. KIDD moved—"That steps be taken by this Council to ascertain whether those persons whose names appear on the list of existing practitioners under the Veterinary Surgeons Act, 1881, have the right to use the title of veterinary surgeon."

Veterinary-Colonel LAMBERT said that, for the purposes of discussion, he would second the motion.

Professor WALLEY suggested that the Solicitor be requested to state his opinion of the matter.

Mr. THATCHER said that, in his opinion, the registered existing practitioners could not be prevented from using the title "veterinary surgeon." The Charter of 1844 gave the profession the exclusive right of using the term "veterinary surgeon." The question was, had that title been abrogated in any way? Section 14 of the Act stated, "The said Charters of the Royal College of Veterinary Surgeons are hereby confirmed, and are declared to be and shall be in full force and virtue, except so far as the same are by this Act altered, or as the same are inconsistent with this Act." They therefore had to see whether there was anything in the Act which was inconsistent with the Charter of 1844. The Register of Veterinary Surgeons was said to be the Register of Veterinary Surgeons as provided by the Charter of 1876, at which time there were only two classes who were called veterinary surgeons, viz., Fellows and Members. Section 15 of the Act stated, "Where at the passing of this Act any person practises, and has continuously for not less than five years next before the passing of this Act practised veterinary surgery in the United Kingdom, but is not on the Register of Veterinary Surgeons, he shall be entitled, subject to the provisions of this Act, to be placed on a separate Register, under the heading of "Existing Practitioners." Section 17 said that after the 31st of December, 1883, any person other than a person who for the time being was on the Register of Veterinary Surgeons was not entitled to practise, and was liable to be fined. Sub-section 2 stated, "From and after the same day a person other than as in this section mentioned shall not be entitled to recover in any court any fee or charge for performing any veterinary operation." Therefore, unless that separate register formed part of the Register of Veterinary Surgeons, as in his opinion it did, there was this inconsistency in the Act, that section 15 gave certain persons certain rights to act as veterinary surgeons, and Sub-section 2 of Section 17 said they were not entitled to recover fees; and Sub-section 1 said they were to be prosecuted if they attempted to so style themselves. If it was desired that the College should go to the expense of stating a case for counsel he would willingly prepare it, and submit it to Mr. Kidd, to see that there was nothing left out.

Mr. KIDD said his object for bringing forward his motion was to have a definite opinion. He did not cast the slightest reflection upon Mr. Thatcher's opinion, but he did not seem to him to have explained the difference between being "in" and "on" the Register. He would move that counsel's opinion be taken.

Mr. HUNTING asked whether it was worth while going to any further expense in the matter after the extremely clear opinion given by the Solicitor? He suggested that the Council pay no further attention to the matter.

The motion that counsel's opinion be taken was then put and lost.

The Obituary List.

The SECRETARY read the obituary list.

Professor WALLEY said that in the four years' scheme no provision had been made as to the length of terms and the period of study. He wished to ask when that would be considered.

The PRESIDENT said he presumed the principals of schools would settle their own length of terms. If Professor Walley wanted to go into the matter, it could be done at the next meeting by giving notice of motion.

(To be continued.)

BRITISH MEDICAL ASSOCIATION.

THIS great Association met at Nottingham at the commencement of August, and among the very numerous papers read and discussed were several of interest to veterinary surgeons. Of these we can only refer to the following two:—

Discussion on Anæsthetics.

Dr. DUDLEY BUXTON opened a discussion upon the "Anæsthetic Action of Chloroform viewed from the standpoint of recent Physiological and Chemical Research." He said that at no time more than the present was attention directed to anæsthetics, for while opinions might differ as to the action or merits of this or that anæsthetic, there was unanimity as to the importance of a more accurate and exact knowledge of the subject. He indicated that accidents occurred under chloroform in several ways and were attributed to various causes by different observers. The phenomena of these accidents he proposed to examine, and, as far as possible, to indicate the physiological facts which underlay them. Deaths were reported to take place from the following causes: 1. Before an operation had commenced, when they were variously referred to fright; reflex inhibition of the heart's action conveyed from some sensory nerve and through the vagus; syncope brought about through direct action of the chloroform itself, or possibly of some impurities contained in it; through interference with respiration arising from mechanical causes—*e.g.*, the constraining effects of tight clothing, voluntary holding of the breath or spasm of the larynx, &c. 2. During an operation, they were then attributed to shock—either simple, the direct effect of the operation upon an imperfectly anæsthetised subject, or shock as understood when surgical procedure was so severe as to make itself felt through chloroform anæsthesia properly and thoroughly established. Deaths were also reported as being due to direct syncope, on the one hand, or to failure of respiration on the other. These cases were attributed by some to nervous origin—action of chloroform upon the medullary centres—respiratory failure being primary, and cardiac failure being secondary; while, on the other hand, it was thought by others that there was an initial action on the heart muscle leading to respiratory failure as a secondary result. 3. Deaths occurring after the operation was completed were, in some instances, attributed to the effects of the anæsthetic. Passing to the physiological side of this question, Dr. Dudley Buxton said that experiment upon the batrachian and mammalian heart muscle had shown that both the vapour and dilute solutions of chloroform were able to completely paralyse it, causing it to lose alike its contractility and irritability; but it might be said that either intravenous injections or inhalations of chloroform could never so act upon the human heart, because before sufficient chloroform had entered the circulation death from respiratory paralysis would have occurred. However, this argument had been shown to be invalid, since Drs. Gaskell and Shore had proved that when blood laden with chloroform entered the medulla and circulated through the respiratory and other centres, the blood pressure did not fall, whereas when the chloroform perfused the heart but was excluded from the nervous system blood pressure rapidly fell. Again, the direct proof of the action of chloroform upon the heart muscle had been demonstrated by the researches of Dr. MacWilliam and other observers, who had found that repeated inhalations led to degenerative changes in the muscular fibres of the heart. It had been attempted to prove that impurities in the chloroform were responsible for the toxic effects of that agent. Upon this point he thought the work of Professor Du Bois Reymond, jun., had failed to establish that

ordinary impurities actually increased, much less caused, the lethal effects of chloroform. How far the nervous system was the origin of death under chloroform was then considered. So-called "reflex death" was probably seldom, if ever, brought about. Professor Wood's experiments had shown that liquid chloroform poured into the larynx when that structure was separated from the trachea, although it was in nervous communication with the medulla, did not materially affect the heart. The experiments of the Hyderabad Commission showed further that vagal inhibition following sensory stimuli is most rare in the lower animals, and the same applies to shock. The experimental evidence would here appear to be in conflict with that advanced in clinical records; and this was pointed out as a reason for not accepting as proved for human beings what was shown to occur in lower animals, unless corroborative proof, either actual or inferential, existed for human beings. The researches of Drs. Gaskell and Shore were taken as proving that the toxic effect of chloroform was less pronounced upon the nervous system than upon the heart. The fall of blood pressure, usually accepted as a sign of vagal action, had been shown to be a more complicated matter, since it occurred when the nervous system was intact and not when it was under the influence of chloroform. It thus appeared that of the deaths grouped under (1) fright possibly acted in some cases in human beings, but never among the lower animals; reflex inhibition of the heart among human beings possibly occurred, but never in the lower animals; mechanical impediment to breathing probably acted both in the lower animals and in man; likewise direct action of chloroform upon the heart was demonstrable in man and in the lower animals. In the last case the actual dilatation of the viscus could be seen, while in the former symptoms existed which were explicable by such an anatomical change taking place. To the deaths grouped under (2) much of what has been said already applied with equal force. It must be added that in the case of the lower animals, shock, hæmorrhage, operation, and so on, appeared to have less effect than in man. Of cases coming under (3) the experimental evidence which seemed to indicate a progressive impairment of the muscle of the heart appeared to explain post-operation deaths occurring with the symptoms of syncope after some hours of resumption of consciousness. Such cases were hardly to be explained under any other hypothesis.

Mr. JOSEPH WHITE, F.R.C.S. Edin., President of the British Medical Association, dwelt upon the importance of the subject. He had carefully studied it for many years. He gave his personal observations upon the size of the pupils under chloroform, believing that when they could be kept fairly contracted the patient was in safety.

Dr. LAWRENCE TURNBULL (Philadelphia), addressed himself to his own and his fellow countrymen's experience upon the relative safety of anæsthetics. He read an interesting report of the way in which patients were anæsthetised in the Johns Hopkins clinics.

Dr. FREDERIC HEWITT acquiesced in Dr. Dudley Buxton's conclusions. He felt strongly that very many of the phenomena met with constantly when human beings were chloroformed were not reproduced when looked for among the lower animals—fright and dread of death were absent from these. He thought vagal influence could not be explained away in human beings, and he described some cases in which vagal inhibition appeared.

Mr. ROWELL spoke upon Dr. Kirk's "theory" of chloroform poisoning, and suggested that in cases of impending death under chloroform a valvular opening should be made below the cardiac apex and the heart rhythmically grasped by the sterilised hand and emptied so as to maintain the circulation.

Mr. RUMBOLD, from an experience of 400 cases of administration of nitrous oxide, extolled its merits in minor surgery. He exhibited an apparatus.

Dr. RALPH STOCKMAN had used samples of chloroform rejected as "bad"

by the makers for anæsthetising animals, and his experience led him to think that impurities played little or no part in chloroform deaths.

After a few words from the Chairman, and a brief reply from Dr. Dudley Buxton, the discussion closed.

The Condemnation of Tuberculous Meat.

Dr. E. W. Hope, Assistant Medical Officer of Health, Liverpool City and Port, said: Cattle, pigs, poultry, and rarely sheep, are all liable to be affected with tubercle; but it is in cattle, and more especially milk cows, that tuberculosis is met with. The flesh of the tuberculous animal is affected in varying degrees, and much diversity of opinion exists as to the stage at which the flesh should be condemned. Opinion is practically unanimous that in advanced stages of tuberculosis, the consumption of the flesh should be prohibited, not that every observer is prepared to state that its consumption would give rise to specific inoculation, but on the general grounds that the flesh is so deteriorated as to possess no longer the nature, quality, and properties of wholesome nutritious meat. Thus far, the position is a simple one, and any practical butcher can recognise when the disease has advanced so far as to prejudice the quality of the meat. Tuberculosis is known by various names, such as "grapes," "wasting," "pearls," and the like, the first term being, perhaps, the commonest, from the fancied grape-like arrangement of the nodular tuberculous masses frequently found adhering to the chest walls. The most common seats of the disease are the lungs, pleuræ, and other serous membranes; the liver, lymphatic, and other glands are often affected, sometimes the marrow and the nervous system, and it is also alleged that bacilli have been found in the flesh. The extent of the local lesions varies widely; they may be limited to a single nodule, or, almost the entire organs mentioned may be invaded, their tissues destroyed by caseous or calcareous masses, or by liquefying pultaceous matter. Grape-like aggregations of various sizes, attached to serous membranes, are extremely common, and the condition left by stripping them away with the costal pleuræ, with a view to conceal the appearances of disease, should at once attract attention, and lead to a close examination. The various conditions are all forms of one and the same process, and caused by a microbe which, growing in the tissues, gives rise to the tubercles, and which, by reason of its being thrown off from the diseased animal in quantity, renders the malady a contagious one. The temperature, which is most favourable to the growth of the microbe, is that of the ordinary body heat of a warm-blooded animal, say 98° to 100° F. A temperature of or below 32° F. appears to kill it, as does also continued exposure above 108° F. These are points of considerable practical moment, as suggestive of the probable effects of cooking, or of refrigeration upon the bacillus. It is regarded as established that the infectious discharges of a tuberculous animal remain actively virulent in this climate for a long time after they have been cast from the body, and stalls and sheds may thus become a source of danger, unless thoroughly cleansed. Inhalation appears to be the usual way in which the microbe enters the body, a circumstance which would be anticipated from the frequency with which the lungs are the seat of the disease; on introduction into the blood, the disease may spread so rapidly as to constitute acute or general tuberculosis, or, on the other hand, it may be limited for a considerable time to the point of entry and neighbouring lymphatic glands, which local lesions are frequently the only ones detectable, producing during life no symptom whatever, the animal being slaughtered in prime condition. As the malady progresses, emaciation and weakness become marked, milk diminishes, and is poor in quality; when the animal is slaughtered, the extensive signs of the disease already described are met with, the flesh is soft, skinny and dropsical, the fat

wet and flabby, the carcass, in short, presenting every sign of unsound meat. A very important and much discussed question is: "At what stage is the flesh of a tuberculous animal unfit for human consumption?" Some observers contend that the whole carcass should be destroyed if the merest trace of tubercle is discovered, even though the carcass may be otherwise in prime condition. The general practice, however, in this country is to condemn any carcass in which the disease is extensive, or has progressed so far as to cause deterioration of the flesh. In Prussia, where very great care is taken in inspecting meat, the law is to this effect: "The condition of the flesh of a tuberculous animal is to be regarded as dangerous to health when the meat contains tuberculous nodules, or the tuberculous animal has begun to show emaciation; while, on the other hand, the meat is to be regarded as fit for food when the masses of the tubercle only occur in an organ, and in general the beast is well nourished." The French decree says: "The flesh of tuberculous animals shall be excluded from consumption (1) if the lesions are generalised, that is to say, not confined; (2) if the lesions, although localised, have invaded the greater part of an organ, or are, by an eruption, on the walls of the chest or the abdominal cavity." That the tubercle bacillus may be introduced into the body by swallowing, is shown by the fact that tuberculous secretions, mucus, saliva, portions of tubercles from diseased tissues, and cultures of the bacilli have been swallowed by various animals, and some of these animals have subsequently developed the disease. It will be noted that in all of those cases the presence of the bacilli was demonstrable in the tissues swallowed—the most diseased parts were, in fact, carefully selected for the experiments. There is obviously a vast difference between eating masses of tuberculous matter, and eating the properly cooked flesh of an animal which is sound, except for the presence of, say, a nodule in the lung. In the report of the inquiry of the Departmental Commission, appointed by the Privy Council in 1888, to inquire into the subject of tuberculosis, no case of tuberculosis in man from eating the flesh of tuberculous animals was stated, although witnesses were fully interrogated upon this point. Professor Bang, of Copenhagen, thinks that experiments show that the muscular tissue is so unfavourable a nidus for the tubercle bacilli, that they do not multiply in it. He is of opinion that the seizure of the meat of every tuberculous animal is too severe a measure, and where the lesion is localised, he does not consider that the consumption of the meat is attended with danger.

Dr. SIMPSON said although ths flesh of an animal, where tubercle was localised in the lungs, might be healthy, bacilli might be carried by the manipulations of the butcher, and deposited on sound flesh.

Dr. ALFRED HILL said the practice he followed with regard to the flesh of tuberculous animals and the views he held were quite in accordance with those of Dr. Hope.. He did not regard the presence of tuberculosis in the lungs or other local organ as rendering the flesh unfit for food. Before condemning it as unfit, he should require evidence either of ill-health before slaughter, or of a vitiated condition of the meat. Mere inferiority of the meat would not necessarily cause it to impart tuberculosis, but he would then condemn it because of its inferior quality, and as a prudent measure of precaution. It had never been proved, as far as he knew, that the eating of the apparently healthy flesh of an apparently healthy animal, althongh affected with local tuberculosis, had produced the disease. As long as human tuberculous disease diminished coincidently with the use of more animal food than ever, and the greater prevalence of animal tuberculosis than ever, he should consider it unjustifiable to condemn such meat out of regard for both the meat trade and the consumer. As to milk from tuberculous cows it had not been found that tuberculous disease among children was increasing

As soon as proof could be adduced of injury, instead of mere theoretical speculation, he should be prepared to change his views and his procedure in regard to the use of such meat and milk.

Dr. BOOBBYER thought it was impossible to adopt the proposal that meat should not be destroyed until tuberculous disease had affected the condition of the whole animal. In Nottingham they followed the rule of destroying animals which were in an extremely emaciated condition indicating disease. There were some cases, however, in which animals appeared to be in a perfectly good condition until they were cut open and the disease was discovered.

Dr. WATT (Aberdeenshire) thought it would be well if the plan recommended by Dr. Hill could be followed, but considered that, for several reasons, it would be unsafe. If any part was affected, the whole carcass should be destroyed. With regard to tuberculous milk, experiments on animals had shown that consumption of milk from tuberculous cows produced tuberculosis. It would be most important to establish a systematic inspection of dairy cows, as carried out in Denmark, to detect tuberculosis at the earliest possible period in the cows. It had been said that the tubercle bacilli could not live in the acid secretion of the stomach, but that did not apply to their spores, which might be absorbed and carried by the lymphatics to the glands.

The CHAIRMAN (Dr. Tatham) contended that the practice of many sanitary authorities in relation to this matter could not be justified. Either tuberculous meat was dangerous or not. He thought it was dangerous, and that therefore every carcass which was tuberculous should be destroyed.

Dr. HOPE, in reply, said that every anxiety was shown by the sanitary authority to protect the public health, and to prevent the consumption of noxious materials as food. Further evidence would be necessary before additional steps could be taken with successful results in regard to the destruction of alleged tuberculous animals.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

AT the monthly meeting of Council held on July 27th, Sir John Thorold reported that, as under clause 4 of the scheme for the Registration of Farriers or Shoeing Smiths, half of the Society's six representatives upon the Registration Committee retired, but were eligible for reappointment, the Committee recommended the reappointment upon the Registration Committee of the President of the Society for the time being, the Chairman of the Veterinary Committee for the time being, and Mr. Charles Clay.

Professor BROWN had presented the following report:—

PLEURO-PNEUMONIA.—Since June 1st there have been only four outbreaks of this disease in Great Britain, in the counties of Lancaster, London, and York (W.R.), and Forfar. In the corresponding period of last year there were forty-eight outbreaks, distributed over twenty-two counties.

FOOT-AND-MOUTH DISEASE.—No cases of this disease have been discovered in Great Britain since the week ended June 10th; and now the whole of the restrictions placed on the movement of animals by the Board of Agriculture on account of foot-and-mouth disease have been removed.

SWINE FEVER.—During the past seven weeks there have been 549 outbreaks of this disease in Great Britain; 2,757 pigs were attacked, 1,434 diseased swine were killed, 986 died, 232 recovered, and 222 remained alive when the last published return was made up.

ANTHRAX.—During the past few weeks there have been two rather serious outbreaks of this disease in Sussex—one at Chalvington and the other at Ringmer. In one of these outbreaks some twenty animals, including two

horses, died; and one of the men employed on the farm, who killed a diseased cow before the nature of the disease was known, got inoculated, and died.

Contagious Foot-rot in Sheep.

Earl CATHCART moved: "That as the existence of a contagious form of Foot-rot in Sheep is now an established fact, the Veterinary Committee be requested to inquire and report as to means (if any) that may be taken or suggested for preventing, or minimising, the effects of this widespread and disastrous contagion. And that the committee be further requested to enquire as to action taken by the United States of America State Department of Agriculture, in regard to Sheep Foot-rot contagion—a contagion scheduled in the United States, together with Sheep-Pox and Scab [*vide* Journal, 3rd Series, Vol. I., Pt. 4]." He said his motion was in no sense a contentious one, but as he had originally brought this matter forward he naturally wished to keep it alive. They were very much indebted to Professor Brown for the able paper he had written in the number of the Journal, and for the very candid manner in which he had admitted the contagious nature of foot-rot, which in this country had never been sufficiently recognised. The Americans in that respect were before them. In the United States the words "contagious diseases" included and applied to all or any of the following diseases:—"Anthrax in cattle, sheep, goats, or swine; contagious pleuro-pneumonia in cattle; tuberculosis in cattle; foot-and-mouth disease in cattle, sheep, goats, and swine; rinderpest in cattle and sheep; sheep-pox, foot-rot, and scab in sheep; hog cholera and swine plague in swine." He wished to ask the Veterinary Committee to ascertain what were the inland regulations in force in the United States with regard to foot-rot. An extract from the American Regulations, which had been kindly furnished to him by the veterinary authorities, merely referred to imports from other countries. He was interested to know what (if any) were the inland regulations. Nothing could be more admirably candid than the announcement with which Professor Brown opened his article:—"In the history of sheep-husbandry, foot-rot has always been referred to as a scourge of the race, causing serious losses wherever it appears, and in some parts of the world the malady assumes a degree of malignancy which entitles it to be classed among the most virulent of animal plagues."

During the period of thirty-six years that he (Lord Cathcart) had himself been engaged in farming (from the year 1850 to 1886), he believed he lost more money from contagious foot-rot than from any other cause. As soon as he got rid of it, the first market purchase was usually the means of bringing it back again. He thought it was very important that the directions in the leaflet that it was proposed to issue should be very specific as to the actual diagnosis of the contagious complaint, as compared with that which was merely accidental or mechanical. The directions should be perfectly plain to everybody interested in the subject. They should have reports, if possible, from different districts as to the prevalence of this contagious disease, so that flockmasters might in their own interests take care that the animals they purchased were free from disease. General diffusion of knowledge was much more important than any legislation or Departmental Orders. They should trust to the general sense of the public to deal with it, as it would be very difficult to control the disease in the same way as other contagious diseases. He thought that the reprint of Professor Brown's paper in the Journal, with additions and alterations by the Professor, would be the best means of dealing with the disease in their present state of knowledge on the subject. The pathology of the disease was not, at present, fully understood, and required to be much further investigated.

Professor SIMONDS said that, with reference to the pathology of foot-rot, he thought (notwithstanding the experiments which had been so successfully

carried out by Professor Brown) that there would be the greatest possible difficulty on the part of owners, farmers, and others to distinguish the ordinary diseases of the sheep, which were exceedingly common, and arose from very many different causes, from the true contagious foot-rot, and that being so, there might be great practical difficulties in the way of carrying out any regulations which would be in themselves sufficient to arrest the progress of foot-rot. They could not, under any circumstances, knowing that they were true cases of foot-rot, deal with the sheep at all, which thus became locked up on the farmers' premises, and could not be turned into money. There were great difficulties in the way of dealing with this disease in the same way as with other contagious diseases of cattle and sheep, which could be readily recognised; but there were no difficulties in the way of further investigation, and he would be willing to lend a hand in carrying out any regulations that might be made.

Earl CATHCART was very much obliged for the remarks of Professor Simonds, who took the same view of the subject as himself. It was still quite uncertain whether the contagion was taken from the foot locally or whether with the food into the mouth, or in both ways.

Sir JOHN THOROLD would only say, on the part of the Veterinary Committee, that they had been for some time engaged, with the help of Professor Brown and the Royal Veterinary College, in investigations into the nature of foot-rot in sheep, and they were anxious to go on with them. Any information which they could obtain from America or otherwise would be published.

Lord CATHCART'S motion having been seconded by Mr. SANDAY, was then put and carried unanimously, as a rider to the report of the Veterinary Committee.

The Docking of Foals' Tails.

The Hon. CECIL T. PARKER, on behalf of the Duke of Westminster (absent), then moved :—

"That in future no foals with docked tails should be entered for the Society's Country Meetings."

He thought perhaps the better way might be to ask leave of the Council to refer the question to the Stock Prizes Committee.

Sir NIGEL KINGSCOTE hoped the matter would be settled at once. To his mind, it was a horrible thing that foals should be turned out with docked tails, and therefore without the means of keeping off flies. He thought it was a barbarous custom to dock the tails of horses at all.

The Hon. C. T. PARKER had no objection to an immediate decision if the Council thought it desirable.

Sir JACOB WILSON said he had received several letters from members of Council on the subject, and seeing it was a very important question, and opinions differed upon it amongst practical men, he thought it would be better for the matter to be referred to the Stock Prizes Committee, as Mr. Parker had suggested.

Mr. SANDAY felt it was undesirable to settle the question then, when there was really no time for its consideration. He moved as an amendment that the matter should be referred to the Stock Prizes Committee, though, as Chairman of the Committee, he had do special desire for this course to be taken.

Mr. MAINWAIRING thought it would be better to refer the matter to the Stock Prizes Committee, so that any objections might be heard. At the same time, he personally thought it would be a good thing if the docking of tails were stopped.

Mr. TREMAYNE asked why the Stock Prizes Committee should be selected as the tribunal to which this matter should be referred.

Sir JACOB WILSON replied that the Stock Prizes Committee was supposed to contain representatives of all the different breeds of horses, and, moreover, the resolution, if passed, must come before the Committee in connection with the regulations for the prize sheet.

Lord EMLYN pointed out that all the members of the Stock Prize Committee were also members of the Council.

Mr. WALTER GILBEY said that if horses' tails were not docked whilst they were young he did not know when they would be docked. If the docking was done when the animal was young, it was no punishment to it; whereas, if the operation was delayed, it was much more painful to the horse. The motion, if carried, would be almost a veto on docking horses' tails' at all. Such a rule, if passed, would not prevent him docking the tails of his foals, because, otherwise, when they were grown up he would not be able to sell them. He thought the resolution should be postponed.

Sir MASSEY LOPES moved an amendment, which was seconded by Mr. DENT, to the effect that the question should be postponed for consideration by the Council at their next meeting.

Mr. MARTIN said the question was a very wide and difficult one. If horses had to be docked at all, it was less painful when they were young. They would soon come to the question of docking sheep. He was in favour of postponement.

The amendment of Sir Massey Lopes, for the postponement of the consideration of the question until the next meeting of the Council, was then put and carried by general consent.

Veterinary Notes in Parliament.

HOUSE OF COMMONS,
August 9th.

Tuberculosis.

Mr. FIELD asked the President of the Board of Agriculture whether the report of the Tuberculosis Commission had been received, or when it might be expected; and whether the destruction of animals without compensation to the owner was to continue when the animals had been purchased in public market under the supervision of a Governmental veterinary inspector, but subsequently condemned by another authority.

Mr. CHAPLIN said the report of the Tuberculosis Commission had not been received, but he was informed by the Secretary of the Commission that the experiments undertaken by them were rapidly approaching a termination, and that a number of valuable facts had been conclusively proved. There was still, however, a very large amount of material to be examined microscopically, and it might be necessary to summon further scientific witnesses. For those reasons it was impossible at present to fix with precision the date of the conclusion of the inquiry. With reference to the second paragraph of the question, the hon. member was in error in supposing that animals could be destroyed by any public authority in consequence of their being affected with tuberculosis, and that such animals were purchased in public market under the supervision of a Governmental veterinary inspector.

August 11th.

Anthrax in Sussex.

Admiral FIELD asked the President of the Board of Agriculture whether he had received any report upon the outbreak of anthrax on a farm in Chalvington, Sussex, in the occupation of Mr. Woodhams, in June last; how many

cattle had died or been affected by the disease; whether it was true that one or more of the farm servants died of the disease; whether any steps were taken by the Department, by advice or otherwise, to assist the tenant in dealing with the disease; and whether the law permitted of compensation being paid for the loss of the cattle.

Mr. CHAPLIN: Yes, Sir; I have received copies of the reports made by the medical officer of health and the sanitary inspector on the subject of the outbreak of anthrax to which my honourable friend refers. Twenty-one cattle and two horses have been attacked with the disease, and all have died, whilst a farm servant by whom one of the animals was killed became infected with the disease, with, I regret to say, a fatal result. At my desire, the chief veterinary inspector of the Board of Agriculture visited the farm on two occasions and gave all the advice and assistance in his power. The law does not provide for the payment of compensation for the loss of animals, which, as in the present instance, have died of disease..

Contagious Pleuro-Pneumonia.

Mr. W. FIELD asked the President of the Board of Agriculture whether it was intended to recommend the institution of scientific experiments to try the efficacy of inoculation as a preventive of pleuro-pneumonia, as the varied and general experience of the colonies was almost entirely in favour of that system; and, whether the Board of Agriculture for England and Scotland, and the Veterinary Department of the Privy Council of Ireland, would in future consult, as far as might be consistent with safety, the convenience of cattle-traders, cowkeepers, and others interested in the imposition of restriction orders which had the force of an Act of Parliament.

Mr. CHAPLIN: No, Sir, it is not my intention to take the course suggested. Numerous experiments have at various times been made with a view to test the value of inoculation as a preventive for pleuro-pneumonia, but experience has shown that the disease can never be stamped out by such means, and I may refer the hon. member to the report of the Departmental Committee of 1888, which is very clear and emphatic on this point. With reference to the imposition of restrictive orders, I may assure the hon. member that it has always been the desire of the Board of Agriculture to adopt the course suggested by him, so far as it was possible to do so consistently with the essential object of such orders, which is, of course, the prevention and extinction of disease.

Mr. W. FIELD asked upon what authority the medical officers of health in various towns throughout the country frequently exercised the power of seizing and destroying the bodies of animals that had been previously passed by a Government inspector as sound in open market, without any compensation to the recent purchaser.

Mr. CHAPLIN: The hon. gentleman is in error in supposing that animals are passed as sound in open market by any Government inspector, and the condition precedent to which he refers does not therefore exist. The power of a medical officer of health to seize meat, &c., which appears to him to be unfit for the food of man, is contained in section 116 of the Public Health Act, 1875, and meat, &c., so seized may be destroyed by order of a justice.

Army Veterinary Department.

THE annual statistical and general report of the Army Veterinary Department, which has just been issued, shows that the home strength on March 31st was 13,309 troop-horses, 220 mules, and 1,767 chargers, against 13,327 troop-horses, 226 mules, and 1,721 chargers, on March 31st, 1891. Serious outbreaks of

influenza at Aldershot and other stations caused the amount of inefficiency from diseases and injuries (71·02 per cent. of the average strength) to be higher than it has been in any year since 1883. The proportionate number of deaths was 2·04 of the average strength; the total number of admissions to treatment, 9,617; and the average number of days each horse remained under treatment, 21. Surgical diseases and injuries were the cause, as usual, of the largest number of admissions; those due to diseases of the chest and air passages increased considerably. Glanders is still absent from among army horses, this being the fourth year of freedom from the disease. The average age of horses serving is now eight years and seven months; there are about 400 of 16 years and upwards. The number of cast horses and mules sold during the year was 4,153. Two courses of officers' classes were held at the Army Veterinary School—80 officers attended these classes and 60 received certificates. The farriers' classes were attended by 118 men, and 105 passed the examination held at the conclusion of the courses.

In the Vaccine establishment, sufficient calf lymph was cultivated during the year to vaccinate 41,134 people, and material for 40,966 people was issued. The lymph appears to have been of good quality when used; as for Home Stations the percentage of successful primary vaccinations was 94·1 per cent., and of revaccinations 89·6 per cent. At Foreign Stations better results were obtained than in previous years, owing to the lymph having been sent to several places in ice, and in all cases prepared with lanolin, which appears to have a special preservative influence. The number of calves vaccinated during the year was 24, giving an average of 1,714 people to each calf; this is regarded as extremely satisfactory. For the very creditable result of the lymph preparation, well deserved praise is given to Veterinary-Captains F. Smith and C. Rutherford.

Obituary.

We regret to announce the sudden death, on August 10th, of Veterinary-Surgeon, First Class, J. J. Channon, who was born on April 30th, 1827, graduated May 22nd, 1850, and entered the Army on August 15th, 1855, when he was gazetted to the Land Transport Corps. He arrived in the Crimea on the 23rd September in that year, after the fall of Sebastopol, and returned to England on August 6th, 1856. Subsequently he was gazetted to the Military Train and Army Service Corps. He was placed on retired pay, in consequence of age, on August 25th, 1880, and temporarily employed at Woolwich during the Egyptian Campaign in 1882.

The following deaths of members of the profession have also been reported:—

M. Hack, Leicester	graduated in	1859	
R. Platt, Killmarsh, Chesterfield ..	„	„	1842
E. J. Bovelt, Bridgewater	„	„	1858
P. D. Kelly, Kilrush	„	„	1882
W. H. Hall, Yoxall, Staffs.	„	„	1876
A. Nimmo, Linlithgow	„	„	1850-1880
A. Martin, Rothsay, Bute	„	„	1877
R. J. Smith, Kidderminster	„	„	1842
C. W. Blake, London	„	„	1861
L. W. Delacherois, Dublin	„	„	1882

Notes and News.

EXCEPTIONAL FECUNDITY.—The *Echo Vétérinaire*, of Liege, for June, contains a communication in which mention is made of a small-sized cow of the native breed and five years old, which was put to the bull when two years of age, became pregnant, and at six months' gestation, aborted two calves. Put to the bull a month afterwards, it went its full time and produced two live calves, which were sent to the butcher. Eleven months after, having again become pregnant, it brought forth four living calves, two males and two females; these also lived and were sold to the butcher. Ten months after this calving, the same cow had three calves, two males and a female, which, when three weeks old, were also sold to the butcher. Thus, in thirty-eight months the cow had produced eleven calves. These were all of average size and in good health, and the cow itself did not appear to be any the worse for the excessive fecundity. The same writer alludes to a two-years-old goat which had given birth to six kids—five male, and one female, which were all in good condition and lively.

MORTALITY AMONG HORSES DURING HOT WEATHER.—During the excessively hot weather towards the end of July in the United States of America, horses suffered very much, though not so severely as mankind perhaps. On one day (July 28th) in New York, 162 died from the heat, and the tramway company decided that "if the heat continues they will stop the traffic on the horse-car lines. The horses are dying in hundreds, and fresh teams are kept at every few blocks, but even with this arrangement it is difficult to replace the animals that are dropping off. The death-rate among the horses on these lines for the past week has been one in ten, while on the 27th and 28th the deaths were one in five." There was also a high death-rate from this cause among the horses in Philadelphia.

DISEASE AMONG PARTRIDGES.—In the Herzegovina an epizoöty has been prevailing among the partridges known as Bartavelles (*Perdrix saratilis*). They become emaciated, lose their feathers, and die. In their muscles are found numerous abcesses the size of a hempseed or a pea, and the liver and spleen are hypertrophied. Dr. Carlinsky has discovered in the bodies of the dead birds, and particularly in the abcesses, a microbe resembling that found in fowl-cholera.

DICHOTOMY (?) IN A HORSE'S LEG.—At the Meeting of the British Association held in Edinburgh in August (Biology section), Professor Cossar Ewart exhibited the right fore foot of a horse with two complete hoofs and supporting fingers, as well as a splint-like remnant of the fourth metacarpal bone and rudiment of the thumb, with its corresponding carpal bone. This was interpreted as a reversion to the condition seen in three and four-toed fossil horse-like animals. A discussion ensued in which Professors Struthers, Cleland, Howes, and Dr. Hurst took part; the possibility of the malformation being the result of dichotomy or forking of a single finger was advanced. Professor Ewart replied.

DEATHS FROM HYDROPHOBIA IN ENGLAND.—An inquiry was recently held at Saltash, with respect to the death of a boy aged 13, which took place on August 1st, from the effect of a bite received on July 6th. This is the second death from hydrophobia due to bites from the same dog, a Chinese chow-chow, recently brought home by a passenger in the troopship *Himalaya*. The dog was shot immediately after the occurrence. Dr. R. T. Meadows, medical officer of health, who attended the lad, stated that when the first death took place he wrote to the Chairman of the Sanitary Committee of the Town Council, and a muzzling order was issued on July 26th. A death from this disease has also occurred at Twickenham, near London.

THE SOUTH AFRICAN HORSE-SICKNESS.—A Reuter's telegram from Cape Town states that it is understood that Dr. Edington has succeeded in discovering the microbe of African horse-sickness. The losses in the Cape Colony from this disease for twelve months have been 13,979 horses and 149 mules.

THE WATER-TROUGHS AND GLANDERS.—Mr. M. W. Milton, Secretary of the Metropolitan Drinking Fountain and Cattle Trough Association, writes that, owing to the continued spread of glanders. and the possibility of the constant use of the drinking troughs for horses and cattle of that association being in any way conducive thereto, the committee have reluctantly decided to close all their troughs in the metropolitan district for a period of two months, by which time it is hoped the disease may have been stamped out.

THE RESPONSIBILITIES OF THE HORSE-SHOER.—Owners of horses who resent the too-frequent incident of a favourite horse found lame from being pricked in the shoeing will appreciate the Act of Parliament, dated 1447. We modernise the spelling. "Forasmuch as ignorant smiths, through ignorance, or drunkenness, spoil or lame men's horses, by shoeing in the quick, it is enacted and ordained that whenever a smith shoes a horse in the quick that smith pay the cost of the horse's keep till he be whole: and, in the meantime, find the man a horse to ride upon and do his labour. And if the horse is lamed in the shoeing and will not heal, the smith shall keep the said horse himself and pay the price of him to the man that owned him." This Act of Parliament was passed by James III. of Scotland, and so late as 1868 a prosecution, under the Act, was carried out in the Small Debt Court at Galashiels. George Mark, a carrier, sued Messrs. Murray and Hepburn for £6 4s. for damage and loss upon a horse sent to them to be shod, and "pricked" in their shop. Unhappily, Sheriff Milne ("Sheriff-Substitute for Selkirkshire") did not take the view of the Scottish monarch: and ruled that "pricking was accidental, and frequently occurred": and that the pursuer (George Mark) had not taken the earliest opportunity to remove the shoes and apply remedies: and gave "decree for defenders," Messrs. Murray and Hepburn.—*Live Stock Journal.*

THE POISONOUS PRINCIPLE OF THE YEW.—It is well known that the yew tree is poisonous to cattle, and that the toxic agent is probably Toxine. Mr. Stuart Wortley, writing from the Downton Agricultural College, has been making some experiments, from which he draws the conclusions that Toxine, whether or not it is the poison affecting cattle, is contained chiefly or entirely in the male yew, and that if it is the poison, the female yew may safely be planted as an ornamental tree in parks and pastures where cattle are turned out.

Correspondence.

HORSES AND ELECTRICITY.

SIR,—As electricity, in one form or another, has been so extensively and successfully employed in the alleviation of human pain, it is but natural to assume that it should be equally beneficial when applied to creatures other than human. Thus, for example, the latest departure in veterinary science consists in the application of electricity to the treatment of the various ailments and diseases to which our faithful friend, the horse, is subject.

The method of treatment and the apparatus used therein have been made the subject of a patent. One wonders only that some process of the kind has not been brought out before.

It was claimed that electricity, administered after the method in question, could be applied with marked benefit to horses suffering from blood, organic, or nervous diseases. Though assured of the theoretical feasibility of the process, the patentee resolved to conclusively demonstrate its practical efficacy before introducing it to public notice.

With this end in view, numerous tests have for some time past been made under the supervision of a well-known veterinary surgeon, and, judging from the results so obtained, this invention seems destined to create a revolution in the veterinary world. For instance, the list of diseases already successfully treated by this method includes locomotor ataxy, tetanus, string-halt, chorea, roaring, immobilite (chink back), rheumatism, rheumatic arthritis, shoulder-slip, shivering, and various forms of nervous disease.

The effect of the treatment is to give tone to the small blood-vessels, to increase absorption in cases of inflammatory swellings, and, in horses recovering from long, severe, and debilitating diseases, to stimulate the appetite and invigorate the system generally. It arrests the wasting of the tissue, and, where the muscles have wasted from sprain or overwork, stimulates their repair and augments their further growth. Thus, valuable horses, or, for the matter of that, cows and other animals, may be cured, which would otherwise be practically worthless.

It is proposed, from what I gather, to establish an infirmary, probably in London, for the treatment of horses, etc., by this method. I hope shortly to be able to supplement this preliminary notice with a full description of the process, together with particulars of some of the more noteworthy cases that have been attested by various members of the veterinary profession.

Tintern Lodge, St. Peter's Square,
Ravenscourt Park, London, W. A. C. DE H. LEAVER.

GLANDERS AND FOUL STABLES.

DEAR SIR,—Much benefit will come from an investigation into the glanders outbreak, if, as a result, there will be better ventilation in the stables of our large cities and towns. Few people have the faintest idea of the vile condition of some of the cab-horse habitations of London. Numerous people whose education is defective seem to me to consider it a sin to allow pure and fresh air to enter their houses. I can assure you that cottagers, and small house tenants never think of opening their windows. In a certain street in a certain part of this enlightened (?) England, I can prove that the windows of several houses were never opened to my knowledge for ten months, and I made a special habit of taking most particular notice. Coachmen are notoriously ignorant and conceited, with usually *white and anæmic-looking faces.* The cause for this latter condition undoubtedly being, that a great part of their time is spent in the company of their horses in stables insufficiently ventilated.

Tuberculosis and glanders are both much encouraged by ill-ventilated buildings, each bacillus much resembling the other. I remember being called, eighteen years ago, to attend a poor pony, the property of some Irish people, in Liquorpont Street, London. I was led—it was night time—down a slanting passage, under a vile tenement termed a house. There I saw my equine patient in a stinking den, more dead than alive. I am not an adept as a draughtsman, otherwise I would make a drawing from memory, and send it to the Royal Society for the Prevention of Cruelty to Animals, as it might be the means of causing that rich and powerful Society to adopt some method to *prevent* such cruelty.

I have frequently been called very *early in the morning* to attend sick horses where the stench was almost unbearable. If human beings are for a

short time compelled to remain in this fetid atmosphere it causes headache and nausea; what then must be the condition and feelings of the poor animals who nightly breathe the same horrible gases?

I have just noticed that a correspondent to the *Daily Telegraph*, after an inspection of the working horses of the metropolis, writes—August 10th, "that the public have no idea of the danger to their health, caused by the shameful condition ot the ordinary London stable." In view of the rapid spread of glanders, he urges a "conference of horse-owners and managers, veterinary and sanitary authorities, and the instant adoption of measures of sanitation. . . ." I have no desire to go to the other extreme; but from an extensive acquaintance with horses in this country and on the Continent of America, etc., I most firmly believe that if the bodies of our horses in this country are well enveloped in clothing, *all that is needed is a roof to cover them*, all windows and doors allowed to be open, provided, of course, that some method is adopted.

I am passionately fond of horses, and if my seldom-used pen can help them, I am satisfied; and if I can be the means of enabling some of my equine friends to breathe a purer atmosphere, I shall not have lived in vain.

"HEALTH."

TO CORRESPONDENTS.

We are compelled to hold over several communications until next month.

R. ROBERTS.—Silence will be best observed under the circumstances.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from Messrs. Walters & Co., London; Vet.-Lieutenant H. T. Pease, A.V.D., India; E. Clarke, London; Messrs. Arnold and Sons, London; Vet.-Captain J. A. Nunn, Lahore; L. Pearson, Philadelphia; A. Railliet, Alfort; Captain Hayes, London; Professor Boschetti, Turin; Vet.-Lieutenant L. J. Blenkinsop, Lahore; Professor J. McI. McCall, Glasgow; J. C. Mitchener, Colmar, Pennsylvania; A. W. Hill, London; Messrs. Cooper, Berkhamsted; "Health"; A. C. de H. Leaver, London; R. Dawson, Reigate; F. C. Mahon, London; J. H. Carter, Burnley; E. Wallis Hoare, Cork.

BOOKS AND PAMPHLETS: *MM. Railliet and Moussu*, La Filiare de Boutons Hémorrhagiques Observee chez l'Ane; *MM. Railliet and Lucet*, sur le *Davainea Proglottina*, Davaine; *MM. Railliet and Cadiot*, Strongylose du Cœur et du Poumon chez un Chien; *Dr. F. Boschetti*, Della Pneumografia nella Diagnosi della Bolsedine; Bulletin des Séances de la Soc. Nationale d'Agriculture de France; Encyklopädie der Gesammten Thierheilkunde und Viehzucht; Bulletin et Mémoires de la Soc. Centrale de Méd. Vétérinaire; Proceedings of the Pennsylvania State Veterinary Association; *W. Sutherland*, Sheep Farming.

JOURNALS, ETC.: *Rural World; Baily's Magazine; Proceedings of the Royal Geographical Society; Bacteriological World; Archiv fur Wissenschaftliche und Praktische Thierheilkunde; Vaccination Inquirer; Journal of the Society of Arts; Annales de Méd. Veterinaire; Live Stock Journal; Echo Vétérinaire; Repertorium der Thierheilkunde; Recueil de Méd. Veterinaire; Lancet; Journal de Méd. Vétérinaire et de Zootechnie; Land and Water; Mark Lane Express; Revue Vétérinaire; Edinburgh Medical Journal; American Veterinary Review; Field; Thierarzt; Deutsche Zeitschrift für Thiermedicin; British Medical Journal; Annales de l'Institut Pasteur; Veterinary Archives and Annals of Comparative Pathology; Clinica Veterinaria; Cape of Good Hope Agricultural Journal; Moderno Zoziatro; Condensed Extracts.*

NEWSPAPERS: *North British Daily Mail; Glasgow Herald; Wrexham Advertiser; Bristol Mercury; Times of India; Nottingham Guardian; North Queensland Herald; Scotsman; Hants Observer and Chronicle.*